ENERGY AND WATER DEVELOPMENT APPROPRIATIONS FOR 2016

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT

MICHAEL K. SIMPSON, Idaho, *Chairman*

RODNEY P. FRELINGHUYSEN, New Jersey
KEN CALVERT, California
CHARLES J. FLEISCHMANN, Tennessee
JEFF FORTENBERRY, Nebraska
KAY GRANGER, Texas
JAIME HERRERA BEUTLER, Washington
DAVID G. VALADAO, California
MARCY KAPTUR, Ohio
PETER J. VISCLOSKY, Indiana
MICHAEL M. HONDA, California
LUCILLE ROYBAL-ALLARD, California

NOTE: Under Committee Rules, Mr. Rogers, as Chairman of the Full Committee, and Mrs. Lowey, as Ranking Minority Member of the Full Committee, are authorized to sit as Members of all Subcommittees.

DONNA SHAHBAZ, ANGIE GIANCARLO, LORAINE HECKENBERG, PERRY YATES, and MATTHEW ANDERSON
Staff Assistants

PART 7

DEPARTMENT OF ENERGY

Secretary of Energy

Printed for the use of the Committee on Appropriations

U.S. GOVERNMENT PUBLISHING OFFICE

96–877 WASHINGTON : 2015

COMMITTEE ON APPROPRIATIONS

HAROLD ROGERS, Kentucky, *Chairman*

RODNEY P. FRELINGHUYSEN, New Jersey
ROBERT B. ADERHOLT, Alabama
KAY GRANGER, Texas
MICHAEL K. SIMPSON, Idaho
JOHN ABNEY CULBERSON, Texas
ANDER CRENSHAW, Florida
JOHN R. CARTER, Texas
KEN CALVERT, California
TOM COLE, Oklahoma
MARIO DIAZ-BALART, Florida
CHARLES W. DENT, Pennsylvania
TOM GRAVES, Georgia
KEVIN YODER, Kansas
STEVE WOMACK, Arkansas
JEFF FORTENBERRY, Nebraska
THOMAS J. ROONEY, Florida
CHARLES J. FLEISCHMANN, Tennessee
JAIME HERRERA BEUTLER, Washington
DAVID P. JOYCE, Ohio
DAVID G. VALADAO, California
ANDY HARRIS, Maryland
MARTHA ROBY, Alabama
MARK E. AMODEI, Nevada
CHRIS STEWART, Utah
E. SCOTT RIGELL, Virginia
DAVID W. JOLLY, Florida
DAVID YOUNG, Iowa
EVAN H. JENKINS, West Virginia
STEVEN M. PALAZZO, Mississippi

NITA M. LOWEY, New York
MARCY KAPTUR, Ohio
PETER J. VISCLOSKY, Indiana
JOSÉ E. SERRANO, New York
ROSA L. DELAURO, Connecticut
DAVID E. PRICE, North Carolina
LUCILLE ROYBAL-ALLARD, California
SAM FARR, California
CHAKA FATTAH, Pennsylvania
SANFORD D. BISHOP, JR., Georgia
BARBARA LEE, California
MICHAEL M. HONDA, California
BETTY MCCOLLUM, Minnesota
STEVE ISRAEL, New York
TIM RYAN, Ohio
C. A. DUTCH RUPPERSBERGER, Maryland
DEBBIE WASSERMAN SCHULTZ, Florida
HENRY CUELLAR, Texas
CHELLIE PINGREE, Maine
MIKE QUIGLEY, Illinois
DEREK KILMER, Washington

WILLIAM E. SMITH, *Clerk and Staff Director*

ENERGY AND WATER DEVELOPMENT, AND RELATED AGENCIES APPROPRIATIONS FOR 2016

THURSDAY, FEBRUARY 26, 2015.

U.S. DEPARTMENT OF ENERGY

WITNESS

HON. ERNEST MONIZ, SECRETARY, U.S. DEPARTMENT OF ENERGY

Mr. SIMPSON. The hearing will come to order.

Secretary Moniz, it is good to see you again.

We have a lot to discuss today, so I will keep my remarks very brief. The Members will be, kind of, coming in as they get here from the snowstorm and make their way through it.

The first thing I have to acknowledge is that the President's budget exceeds the Budget Control Act statutory caps for fiscal year 2016 by $71 billion. Since this increase was offset by legislative proposals that, frankly, can't pass and savings gimmicks that do not actually save, it is unlikely that the Appropriations Committee will be funding at this level.

So, while it is great to see some of the Department of Energy's funding increases proposed, since they were not actually the result of making the tough choices needed in this fiscal environment, we can't realistically use this request as a true measure of the needs and priorities.

Equally disappointing is that, even with the increases in your budget request, the budget funds administration priorities at the expense of nuclear energy and fossil energy, accounts that can help secure our Nation's energy security both now and in the future.

The hearings that we have scheduled to review the budget request for the Department of Energy, beginning with this one, need to shed some light on what is actually needed in fiscal year 2016 to ensure and secure a prosperous Nation.

Secretary Moniz, during last year's budget hearing, I asked you to describe your vision for the Department. You highlighted the Department's role as a science and technology powerhouse and the importance of the national lab system in that role. Additionally, you discussed the Department's reorganization and how that reorganization would support the energy science agenda, ensure nuclear security, and improve management and performance. I look forward to discussing your vision further and learning more about the actions you have taken to create a stronger Department of Energy.

Please ensure that the hearing record, questions for the record, and any supporting information requested by the subcommittee are delivered in final form to us no later than 4 weeks from the time that you receive them.

Members who have additional questions for the record will have until close of business tomorrow to provide them to the subcommittee office.

With that, I will turn to the ranking member of the full Appropriations Committee, Ms. Lowey from New York.

[The information follows:]

Chairman Mike Simpson
Subcommittee on Energy and Water Development and Related Agencies, House Committee on Appropriations

FY 2016 Budget Hearing – Department of Energy
February 26, 2015
Opening Statement As Prepared

The hearing will come to order.

Secretary Moniz, it's good to see you again, and welcome back.

We have a lot to discuss today so I will keep my remarks brief.

The first thing we have to acknowledge is that the President's budget exceeds the Budget Control Act statutory caps for fiscal year 2016 by $71 billion. Since this increase was offset by legislative proposals that cannot pass and savings gimmicks that do not actually save, it is unlikely that the Appropriations Committee will be funding at this level. So, while it was great to see some of the Department of Energy funding increases proposed, since they were not actually the result of making the tough choices needed in this fiscal environment, we cannot realistically use this request as a true measure of need or priorities.

Equally disappointing, is that even with the increases in your budget request, the budget funds Administration priorities at the expense of nuclear and fossil energy – accounts that can help secure our nation's energy security both now and in the future.

The hearings that we have scheduled to review the budget request for the Department of Energy, beginning with this one, need to shed some light on what is actually needed in fiscal year 2016 to ensure a secure and prosperous nation.

Secretary Moniz, at last year's hearing, I asked you to describe your vision for the Department. You highlighted the Department's role as "a science and technology powerhouse" and the importance of the national lab system to that role. Additionally, you discussed the Department's reorganization and how that reorganization would support the energy/science agenda, ensure nuclear security, and improve management and performance.

I look forward to discussing your vision further and learning more about the actions you have taken to create a stronger Department of Energy.

Please ensure that the hearing record, questions for the record, and any supporting information requested by the subcommittee are delivered in final form to us no later than four weeks from the time that you receive them.

Members who have additional questions for the record will have until the close of business tomorrow to provide them the subcommittee office.

With that, I will turn to my Ranking Member, Ms. Kaptur, for her opening statement.

#####

Mrs. LOWEY. Well, thank you very much, Mr. Chairman.

And I would like to welcome Secretary Moniz and thank you very much for coming before our committee today.

The President's budget request in fiscal year 2016 calls for investments in research, education, training, and infrastructure. It also calls for the end of the mindless austerity of sequestration, urging Congress to replace it with more targeted spending cuts, program integrity measures, and the closure of several outdated tax loopholes.

The effects of sequestration were immense and are still being felt. Critical training was postponed, investments were put off, research abruptly halted. It was a worst-case scenario that never should have happened and absolutely should never be repeated.

I understand there are various ways we can get there, but what is important is that we craft another compromise, just like we did under the Murray-Ryan agreement. That plan certainly was not perfect, but it does provide a path forward for another budget deal.

Without such an agreement, our appropriations process is deeply imperiled. Discretionary funding is falling to its lowest level as a percentage of GDP since the Eisenhower administration. We must again act to ensure reasonable allocations to the important programs and investments funded through the appropriations process.

The budget request for the Department of Energy programs is an increase of $2.5 billion from the 2015 enacted level. These increases would allow robust investments to be made in most of the major programs undertaken by the Department.

These programs provide the foundation for the current domestic energy revolution our Nation is experiencing and help better prepare for our future energy needs. We all see the immediate economic benefit being felt across the country as gas prices have eased, but I hope we don't take our eyes off the bigger picture. We must continue making critical investments in long-term energy strategies.

To that end, I strongly support the President's continued commitment to additional investments in clean energy, and I hope this subcommittee gives careful consideration to the $800 million requested increase for renewable energy.

Given the experience with Hurricane Sandy and the difficulty the region faced with restoring the electric grid, I also applaud the inclusion of new investments in energy infrastructure technology to improve the resilience of the electric grid.

I also share the Department's continued commitment to improving our country's robust scientific workforce. Equipping our citizenry with the knowledge to capitalize on tomorrow's clean energy economy is one of the best ways to mitigate the impacts of global warming. With a return on investment of 20 to 67 percent from publicly funded research and development, it is imperative that we continue to invest in innovation at our Nation's colleges, universities, and national labs.

These are all important priorities. I look forward to hearing more details from the Department today.

And thank you, Mr. Chairman.

[The information follows:]

Statement of Nita M. Lowey
Department of Energy Fiscal Year 2016 Budget Hearing
February 26, 2015

Thank you, Mr. Chairman. I would like to welcome Secretary Moniz and thank him for coming before our committee today.

The President's budget request for fiscal year 2016 calls for investments in research, education, training, and infrastructure. It also calls for the end of the mindless austerity of sequestration, urging Congress to replace it with more targeted spending cuts, program integrity measures, and the closure of several outdated tax loopholes.

The effects of sequestration were immense, and are still being felt. Critical training was postponed; investments were put-off; and research abruptly halted. It was a worst-case scenario that never should have happened and absolutely should never be repeated.

I understand there are various ways we can get there, but what is important is that we craft another compromise – just like we did under the Murray-Ryan agreement. That plan was not perfect, but it does provide a path forward for another budget deal. Without such an agreement, our appropriations process is deeply imperiled. Discretionary funding is falling to its lowest level, as a percentage of GDP, since the Eisenhower Administration. We must again act to ensure reasonable allocations for the important programs and investments funded through the appropriations process.

The budget request for the Department of Energy programs is an increase of $2.5 billion from the 2015 enacted level. These increases would allow robust investments to be made in most of the major programs undertaken by the Department. These programs provide the foundation for the current domestic energy revolution our nation is experiencing, and help better prepare for our future energy needs.

We all see the immediate economic benefit being felt across the country as gas prices have eased. But I hope we don't take our eyes off the bigger picture. We must continue making critical investments in long-term energy strategies. To that end, I strongly support the President's continued commitment to additional investments in clean energy, and I hope this subcommittee gives careful consideration to the $800 million requested increase for renewable energy.

Given the experience with Hurricane Sandy and the difficulty the region faced with restoring the electric grid, I also applaud the inclusion of new investments in energy infrastructure technology to improve the resilience of the electric grid.

I also share the Department's continued commitment to improving our country's robust scientific workforce. Equipping our citizenry with the knowledge to capitalize on tomorrow's clean energy economy is one of the best ways to mitigate the impacts of global warming. With a return on investment of 20 to 67 percent from publicly funded research and development, it is imperative that we continue to invest in innovation at our nation's colleges, universities, and national labs.

These are all important priorities, and I look forward to hearing more details from the Department today. Thank you, Mr. Chairman.

Mr. SIMPSON. Thank you.

Mr. Secretary, again, welcome. We look forward to your testimony. Your full statement will be included in the record. The time is yours.

Secretary MONIZ. Thank you, Chairman Simpson and Ranking Member Lowey and members of the committee. Again, I am always pleased to come back before you and have our chat about our programs and our budgets.

As you said, the request is for $29.9 billion, about a 9 percent increase. We may come back to the issue of paying for it. The President believes he has put forward a way of doing that. And, certainly, I think the strong budget proposed for the Department of Energy, I think, reflects the importance of our missions to this country, from advancing the all-of-the-above energy strategy towards a low-carbon future, providing the backbone for a significant part of the basic research in this country, assuring nuclear security, and cleaning up the cold war-era environmental contamination.

The increase, as was said, is about $2.5 billion, roughly equally split between the defense and civilian activities—$1.28 billion for defense specifically and $1.23 billion for the nondefense programs.

Let me just say a few words about some of these mission areas.

Starting with science, we have a $5.34 billion request, a 5 percent increase. There is much going on here. I would just point out one of the areas, is that we remain committed, and this has been true in good and bad budgets, to continuing to push the cutting-edge facilities that are used by 31,000 scientists last year at our national laboratories—neutron sources, light sources, and other kinds of facilities.

Just a few weeks ago, I was able to cut the ribbon, if you like, of a brand-new light source at Brookhaven National Laboratory, a billion-dollar-scale project that came in on budget and under schedule by 6 months.

In the energy portion of the budget, that is about $5.38 billion—I am sorry, on the science, I did want to also emphasize very importantly the cost-cutting proposal we have to go onto the exascale computing regime, an absolutely critical enabling technology which the Department of Energy has always led in this country.

Energy, $5.38 billion; that is a 27 percent increase. Over the last year, we have—well, we have come close. This year, we will make about 10 million tons of CO_2 sequestration. We saw, with some assistance from the Department of Energy, the first two commercial cellulosic ethanol facilities coming on. We advanced efficiency standards, just in 2014, that together will cumulatively to 2030, reduce carbon emissions by 435 million tons and save consumers about $78 billion in energy costs.

In this area, another focus area is advanced manufacturing. We are seeing a great story in this country in manufacturing. Our energy revolution is a big part of that, but, in addition, we are continuing to advance towards the new kinds of manufacturing capabilities, like 3D printing, additive printing, and the like. That will be so important. And so, in the budget, we do request for two new manufacturing institutes, following those in wide band gap semi-

conductors, in composite materials, and soon in smart manufacturing that we will be supporting.

Also, I would just highlight a $40 million request to go to the next phase of SuperTruck so that we can get Class 8 trucks, for example, with 100 percent reduction in their energy requirements.

On the carbon-capture side, I will mention, in addition to our own programs, one that is government-wide, and that is the proposal for some new tax credits to encourage CCS: $2 billion of credit subsidy support for CCS infrastructure and an additional credit for sequestered carbon.

ARPA–E I would highlight. We are requesting an increase from $280 million to $325 million. I would like to say that next month will be the fifth anniversary of the very first ARPA–E contract that was signed. Five years now is a period in which we can begin to look at outcomes, and we are seeing those outcomes. We are seeing 30 companies, 5 of which have been bought by strategic investors, major corporations. We are seeing 37 additional projects that have received substantial funding from other Federal agencies. So we are getting a great return, some really exciting stuff.

Going back to 3D printing, 2 weeks ago at the ARPA–E summit—I won't go into this, but you could see the printed car that soon will be offered commercially, where you go in, tell what kind of car you want, and they will print it for you in 12 hours. I mean, this is really pretty exciting stuff. And Oak Ridge—I should point to Mr. Fleischmann—Oak Ridge was part of that initiative.

The grid, Ranking Member Lowey mentioned, $356 million for a crosscutting initiative, "crosscutting" in two senses, actually—crosscutting in our program space and crosscutting with a novel laboratory systemwide initiative to do much of the execution.

And this will be very important going from new technologies, new data integration, analytical tools, all those things that we will need for the grid of the future, supplemented by something else—and that something else will be in our Quadrennial Energy Review, that we hope to have through the complex interagency process in a few weeks—we will propose two State grant programs for electricity reliability and for energy assurance.

And I would also like to welcome Ranking Member Kaptur to the hearing.

Let me just say a word about our national security, our nuclear security. The proposal is for $11.6 billion for the National Nuclear Security Administration. That is a 10 percent increase.

As an aside, I will just note that we know that our military leaders have been saying now for quite a while that the sequestration caps just are constraining our national security posture. That is true, as well, for the DOE's part of security.

It all starts with us, with the tremendous success that we should never tire of repeating, inventing a whole new process, science-based, to maintain the safety and reliability of our nuclear stockpile without testing. And we are now over 20 years into that program, and we see that continuing for some time.

Very importantly, in the budget will be support for the process now of completing over the next decade or so the modernization of our production complex, which is badly outdated and has both production and security and safety concerns for us.

Nonproliferation: Last year we did work, and we managed to have 190 kilograms of high-enriched uranium returned to countries of origin, the United States and Russia. In fact, this is the one area, frankly, where cooperation with Russia continues. And last year, working with them, materials and nuclear weapons materials or potential weapons materials from Hungary, Poland, and Kazakhstan were returned to Russia.

$1.4 billion for naval reactors—very important, for example, in continuing development of the Ohio-class replacement reactor for late in the next decade. And, last year, we delivered the first reactor for the next class of aircraft carrier, going beyond the Nimitz class.

Management performance, finally. The biggest budget item there is environmental management, our proposal of $5.8 billion.

I do want to emphasize, again, we sometimes lose perspective, given all the, frankly, the major challenges we have in this area, which we recognize. But we also should remember that 85 percent of the EM sites and 90 percent of the footprint have actually been successfully addressed. We are left now with some of, of course, the most difficult and persistent problems.

We will, with this budget request, in fiscal year 2015 and the beginning of fiscal year 2016, we are on track to resume operations at WIPP roughly a year from now, in the first quarter of 2016. And, also, I will note that fiscal year 2015 funding enabled us to complete demolition of the K–25 facility at Oak Ridge.

In addition to the EM projects, I will just highlight that I think last year in this meeting we talked about the needed reforms of project management. We have done that. I believe we have put a system now in place that will continue to improve our project management. We are pleased that we are off of the high-risk list for all science projects and all other projects up to $750 million, but that leaves now, of course, some of the real nasties, if you like, to manage.

That concludes my statement, and I look forward to our dialogue. Thank you.

[The information follows:]

Testimony of Secretary Ernest Moniz
U.S. Department of Energy
Before the
U.S. House Committee on Appropriations
Energy and Water Development Subcommittee
February 26, 2015

Chairmen Rogers and Simpson, Ranking Members Lowey and Kaptur, and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the Department of Energy's (DOE) Budget Request for fiscal year (FY) 2016. I appreciate the opportunity to discuss how the Budget Request advances the Department of Energy's missions.

Advancing Nuclear Security, Science & Energy, and Environmental Cleanup

DOE is entrusted with a broad and diverse portfolio across its three major mission areas of nuclear security, science and energy, and environmental management. The Budget Request for fiscal year (FY) 2016 for the Department of Energy is $29.9 billion, $2.5 billion above FY 2015 enacted, to support our mission responsibilities and to continue improving our management and performance in support of those missions.

For nuclear security, the Budget includes $12.6 billion, an increase of $1.2 billion over the FY 2015 enacted level, to support DOE's responsibilities of maintaining and modernizing, via life extension programs, the nuclear deterrent without testing; controlling and eliminating nuclear materials worldwide and providing nuclear and radiological emergency response capabilities in an age of global terrorism; and propelling our nuclear Navy.

For science and energy, the Budget includes $10.7 billion, an increase of $1.3 billion over the FY 2015 enacted, to support DOE's missions of enabling the transition to a clean energy future with low-cost, all-of-the-above energy technologies; supporting a secure, modern, and resilient energy infrastructure; and providing the backbone for discovery and innovation, especially in the physical sciences, for America's research community.

For environmental management, the Budget includes $5.8 billion, to support DOE's responsibility of cleaning up from the Cold War legacy of nuclear weapons production.

Approximately $18.9 billion, or 63 percent of the Department's Budget Request, is national security-related funding, including the nuclear security and most of the environmental management programs. The remaining 37 percent is for non-defense programs in energy, science, and other programs such as building capabilities to respond to energy disruptions, enhancing data collection and analysis in critical areas, and supporting obligations for international cooperation in clean energy and energy security.

Science: Leading Edge Research and World Class Research Infrastructure

Starting with basic research, DOE's Office of Science is the largest federal sponsor of basic research in the physical sciences, supporting 22,000 researchers at 17 National Laboratories and more than 300 universities. Informed by the latest science advisory council reports and recommendations, the FY 2016 Budget Request provides $5.34 billion for Science, $272 million above the FY 2015 enacted level, to continue to lead basic research in the physical sciences and develop and operate cutting-edge scientific user facilities while strengthening the connection between advances in fundamental science and technology innovation.

One of the signature aspects of our basic science research program is the Department's support for the construction and operation of major user facilities at the national laboratories that serve over 31,000 scientists and engineers each year on an open-access basis. We are committed to staying at the cutting edge of light sources, super computers, neutron sources, and other facilities essential to advancing our mission. In the last year, for example, we completed the brightest light source in the world, the National Synchrotron Light Source II at Brookhaven National Laboratory, ahead of schedule and on budget. We are at the commissioning phase of the 12 GeV Upgrade to the Continuous Electron Beam Accelerator Facility at the Thomas Jefferson National Accelerator Facility, and the National Spherical Torus Experiment at Princeton Plasma Physics Laboratory intends to begin research this summer after a significant upgrade.

Looking forward in the FY 2016 Budget, we continue construction of critical, new user facilities while ensuring increased investment in national laboratory infrastructure renewal to help sustain America's scientific enterprise. The Request supports a major upgrade of the Linac Coherent Light Source at SLAC and construction of the Facility for Rare Isotope Beams at Michigan State University. In addition, the Budget provides approximately $2 billion to fund operations of our 27 existing scientific user facilities.

These facilities investments and research grants funded by the Office of Science will ensure that we continue to support discovery science, as well as science that underpins future energy and other technologies.

For example, using the current Linac Coherent Light Source at SLAC, scientists last year mapped for the first time the structure of a protein within a living cell. This single example highlights the tremendous benefits of our national laboratories in a broad range of scientific and applied areas. In addition, the Office of Science supports research at hundreds of universities in all fifty states through competitive grants to advance our mission. For example, a university group recently developed a new class of polymer-based flexible electronics for solar cells and medical applications through DOE-funded research.

High performance computing is a traditional area of strength and responsibility for the Department of Energy that has been an important component of U.S. leadership in science and technology more broadly. The FY 2016 Budget grows our investment significantly to $273 million for a multi-year, joint Office of Science-National Nuclear Security Administration (NNSA) effort to achieve exascale computing—computing platforms with 100 to 1000 times more computational power than today's systems. This effort requires researchers and industry to overcome a number of technical challenges, including energy and big data management, as part of our push to develop enabling capabilities for exascale computing. We recently announced the joint Collaboration of Oak Ridge, Argonne, and Lawrence Livermore (CORAL) to advance within an order of magnitude of the exascale target within a few years. In addition, the Office of Science is supporting the Computational Science Graduate Fellowship program to support training in advanced scientific computing. These investments will ensure continued U.S. leadership of this critical capability in a very competitive global environment.

The Budget provides funding at the FY 2015 level for the U.S. contributions to the ITER project, a major international fusion facility currently under construction in France. ITER will be the world's first magnetic confinement long-pulse, high-power burning plasma experiment aimed at demonstrating the scientific and technical feasibility of fusion energy, and the request includes support for important critical-path items.

We will continue in this Budget to grow the Energy Frontier Research Center (EFRC) program by initiating five new centers and continuing support for existing Centers, for a total investment of $110 million in FY 2016. This EFRC program is our flagship investment in basic science that underpins future energy technologies.

With our Budget Request, we support Fermilab operations at a total of $135 million for operations, which includes operations of the NOvA neutrino experiment. We are also investing $20 million to move forward planning and design for the Long Baseline Neutrino Facility at Fermilab. Last year, the particle physics community came forward with a visionary strategic plan for the High Energy Physics program, and our Budget Request responds to their recommendations, specifically by aiming to develop a strong international consortium for the next generation of neutrino physics experiments.

Energy

All-of-the-Above Energy Approach for a Clean Energy Economy

Preparing for the clean energy economy in order to address climate change and energy security, principally through science and technology, is an essential focus of the Department of Energy. The President's Climate Action Plan is a guiding document for our efforts to mitigate climate change risks through clean energy technologies. The Administration remains committed to an all-of-the-above energy approach, and we believe that we need to enable technologies across all fuel sources to become competitors in a future clean energy marketplace.

In the last year, we have seen important accomplishments across the Department's technology portfolio that highlight our all-of-the-above approach. We have geologically sequestered over 9 million metric tons of CO_2 through DOE-supported projects. Two commercial-scale cellulosic ethanol facilities supported by

DOE grants or loan guarantees have commenced operations. We have commissioned one of the world's largest battery storage systems at the Tehachapi Wind Energy Storage Project. We have issued ten final appliance energy efficiency standards in calendar year 2014, which altogether will help reduce carbon dioxide emissions by over 435 million metric tons through 2030. Standards enacted since 2009 are projected to avoid a cumulative total of 2.2 billion metric tons of carbon emissions through 2030. The Office of Energy Efficiency and Renewable Energy (EERE) has achieved 70 percent of the SunShot goal of cost parity for utility scale solar energy.

The Advanced Research Projects Agency—Energy's (ARPA-E) grant program has attracted more than $850 million in private follow-on funding to 34 ARPA-E projects, with 30 ARPA-E teams forming new companies.

EERE has launched the Frontier Observatory for Research in Geothermal Energy (FORGE), a first-of-a-kind field laboratory to deploy enhanced geothermal energy systems, and we have seen battery technology improvements that are projected to reduce battery costs for electric vehicles by 40 percent. The Office of Nuclear Energy has successfully completed the first 5-year program at the Consortium for Advanced Simulation of Light Water Reactors (CASL) nuclear modeling Hub at Oak Ridge and has initiated a second award for design and licensing support of a small modular nuclear reactor with advanced safety features.

Consistent with an all-of-the-above energy strategy, the DOE Loan Programs Office has issued loan guarantee solicitations for innovative technologies in four areas, including $4 billion for renewable energy and energy efficiency, $8 billion for fossil energy, $12 billion for nuclear energy, and $16 billion for advanced vehicle technology manufacturing.

Projects that this program has supported include one of the world's largest wind farms; several of the world's largest solar generation and thermal energy storage systems; Tesla Motors; and more than a dozen new or retooled auto manufacturing plants. This program's accomplishments include issuing loan guarantees for projects that avoided more than 6.1 million metric tons of carbon dioxide cumulatively in 2014, and for companies that produced more than 2.1 million fuel-efficient vehicles in 2014. We are moving aggressively in finding good projects to

deploy innovative energy technologies using the remaining $40 billion in loan authority in the coming years.

Together, these accomplishments illustrate how DOE's programs invest in an all-of-the-above spectrum of energy technologies, and the FY 2016 Budget Request continues forward on that strategy with a $5.4 billion request for our applied energy programs.

Advanced manufacturing will continue to be a major focus of our investments. We will continue to help support an American manufacturing renaissance. The FY 2016 Budget fully funds two new clean energy manufacturing innovation institutes and continues funding for four institutes, as part of the larger National Network for Manufacturing Innovation, including the advanced composites manufacturing institute in Tennessee the President announced in January. To support these institutes, the Request provides $196 million out of a total request of $404 million for EERE's Advanced Manufacturing program.

In energy efficiency, the Request invests $264 million, an increase of $92 million, to develop and promote the adoption of technologies and practices that, when fully deployed, would reduce U.S. building-related energy use by 50 percent from the 2010 Annual Energy Outlook baseline. It also provides $228 million, $35 million above FY 2015, to support competitively selected projects, training and technical assistance, and residential energy efficiency retrofits to approximately 33,000 low-income households nationwide.

The FEMP Budget includes $15 million for the Federal Energy Efficiency Fund which provides direct assistance to agencies for investing in priority energy projects for efficiency and renewables. By providing direct funding and leveraging cost sharing at other agencies, the fund creates greater opportunities to develop Federal projects that may not otherwise be implemented.

The Request increases our investments in sustainable transportation, including $40 million for the SuperTruck II initiative to develop and demonstrate technologies to double class 8 freight truck efficiency by 2020 from a 2009 baseline. The Request also continues our focus on electric vehicles by investing $253 million in the EV Everywhere initiative, which aims to enable domestic production of plug-in

vehicles that are as affordable and convenient as gasoline vehicles by 2022. By continuing to make progress in core component technologies such as the dramatic reductions we are seeing in battery and fuel cell costs, we are looking to achieve transformative performance improvements for electric vehicles in the marketplace.

In biofuels, the Budget continues our focus on drop-in fuels, which can take advantage of existing infrastructure, and we will provide $45 million for the jointly funded USDA/DOD/DOE commercial scale biorefineries program to produce military specification drop-in fuels. We will also continue research and development efforts on supplying, formatting, and converting cellulosic and algae-based feedstocks to bio-based gasoline and diesel, with a $138 million investment in the FY 2016 Request.

The Budget continues to support accelerated advances in renewable energy. The SunShot Initiative has helped accelerate the reduction in solar costs, and our request of $337 million, an increase of $104 million, aims to continue progress to achieve cost parity without subsidies by 2020. For wind energy, the Request of $146 million, an increase of $39 million, includes funding for year five of a six fiscal-year Offshore Wind Advanced Technology Demonstration program supporting three offshore wind projects on track to begin operation in 2017. Our request of $96 million for geothermal energy, $41 million above FY 2015, implements the FORGE, an experimental facility aimed to advance enhanced geothermal systems, and pursues new approaches to hydrothermal development with a special focus on collaborative efforts with the Office of Fossil Energy on subsurface science, technology and engineering.

As we witness the transformation of our Nation's electric grid, the Department continues to drive electric grid modernization and resilience. In May 2014, with cost-share funding provided by the Office of Electricity Delivery and Energy Reliability (OE), Southern California Edison constructed and installed equipment for a prototype 8 megawatt/32 megawatt-hour battery storage plant for wind integration at Tehachapi, CA. The Tehachapi Wind Energy Storage Project is positioned to demonstrate the effectiveness of lithium-ion battery and smart inverter technologies to improve grid performance and assist in the integration of variable energy resources. In addition, we continue improving the security of the Nation's energy infrastructure. Oak Ridge National Laboratory announced in

January 2015 the licensing of its Hyperion software, which helps detect software that has been maliciously altered. Today, more than 20 new technologies that OE investments helped support are now being used to further advance the resilience of the nation's energy delivery systems.

In fossil energy, we will continue our across-the-board focus on carbon capture and sequestration and improving the environmental performance of natural gas development. In particular, the FY 2016 Budget includes funding to conduct initial R&D towards demonstration of carbon capture and storage for natural gas plants. While natural gas is an important bridge fuel, natural gas, as well as coal, will need carbon capture and sequestration to compete in a future clean energy economy.

And while the FY 2016 Budget does not request new authority in these areas, the Department has $8 billion in loan guarantee authority for advanced fossil technologies, as I mentioned earlier, and the Department will continue to work with prospective applicants. Through the President's Budget Request for the Treasury Department, the Administration is also proposing a new, $2 billion refundable investment tax credit, including support for the infrastructure for carbon capture and sequestration, as well as a sequestration credit for commercial carbon capture use and storage (CCUS) deployment to allow for enhanced oil recovery or injection into deep saline aquifers.

In the area of nuclear energy, the Request includes $62.5 million to continue technical support for moving a small modular reactor to the Nuclear Regulatory Commission licensing stage by the end of 2016, as a step towards industry's demonstration of this important technology early in the next decade. The Request includes $326 million to support research and development on reactor aging issues, advanced reactor concepts, and the fuel cycle. This request continues to support R&D on nuclear fuel issues at the Idaho National Laboratory. It also supports research on accident tolerant fuels and includes funding to continue laying the groundwork for implementing the Administration's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste, including a consent-based approach to the siting of storage and disposal facilities for nuclear waste. The Request also focuses resources on maintaining operational readiness at the Idaho National Laboratory, including $23.2 million for major power

distribution infrastructure refurbishments and $11.7 million for critical security infrastructure investments.

The Request includes $325 million for ARPA-E, an increase of $45 million from FY 2015, to continue to grow this important program. The program, which received its first appropriation in 2009, is now showing impressive results. It has over 400 projects to date, and the first group of completed projects has led to 30 new companies, of which five have been acquired by large strategic investors. Altogether, 34 ARPA-E projects have attracted over $850 million in follow-on funding.

Through ARPA-E, we will continue to invest in early-stage innovation with the potential to lead to transformational energy technologies.

For the loan programs, while the Request does not propose new authority for the Title 17 or Advanced Technology Vehicles Manufacturing loan programs, the FY 2016 Budget does include $9 million for credit subsidy to support a new loan guarantee solicitation for new clean energy projects on Tribal Lands.

In addition to the new loan program, the Request provides $20 million for the Office of Indian Energy Policy and Programs, an increase of $4 million, for its technical and financial assistance programs, with increased emphasis on remote communities and the National Strategy for the Arctic Region.

The Department's final FY 2015 Budget supported a new workforce development effort for graduate and post-doctoral training in three areas of specific mission need for the Department: high performance computing in the Office of Science, advanced manufacturing in the Office of Energy Efficiency and Renewable Energy, and subsurface topics and project management in the Office of Environmental Management. These DOE traineeships are modeled in part after other federal programs for university-led graduate traineeships and include components that are uniquely focused on DOE mission workforce training needs. Our FY 2016 Budget Request proposes to add a fourth traineeship on radiochemistry, supported by the Office of Nuclear Energy, where we see a specific mission need.

Transforming Energy Systems, Investing in Resilient Energy Infrastructure

In addition to the clean energy investments I just discussed, our Nation's energy infrastructure is an area that needs—and is now getting—more attention.

We have had several recent accomplishments relating to our energy infrastructure. Following the aftermath of Superstorm Sandy, the Office of Electricity Delivery and Energy Reliability committed $500,000, along with EERE, totaling $1 million for Sandia National Laboratories to provide technical assistance to New Jersey Transit and the Board of Public Utilities to assess NJ Transit's energy needs and help develop a conceptual design of an advanced microgrid system that will avoid disruptions and make it easier to get the power back on after a major disaster.

Led by our Office of Energy Policy and Systems Analysis, we have also completed a nationwide public stakeholder process and analytical work in support of the upcoming release of the first-ever Quadrennial Energy Review (QER) of U.S. energy infrastructures.

The QER is a four-year interagency process, with the first year focusing on energy infrastructure—the transmission, storage, and delivery of energy. We expect the first QER installment to be released soon, and many of you may be interested in that document for its systematic analysis of the breadth of challenges with our current energy infrastructure. The QER will also include recommendations to drive future program directions.

The electricity grid underpins many other infrastructures, and the FY 2016 Budget Request includes $356 million, an increase of $160 million, for a major crosscutting initiative led by the Office of Electricity Delivery and Energy Reliability to focus on the modernization of the electricity grid. This initiative invests in technology development, enhanced security, and modeling to enable the electricity grid of the future. This initiative includes $10 million for R&D to improve resilience of large-scale electricity transformers and $14.5 million to transition to an integrated system at the distribution level and develop a platform for market-based control signals. In addition, the Request establishes a virtual collaborative environment for conducting real-time advanced digital forensics

cybersecurity analysis, which can be used to analyze untested and untrusted code, programs, and websites without allowing the software to harm the host device.

The Request includes $15 million to develop advanced technologies to detect and mitigate methane emissions from natural gas transmission, distribution, and storage facilities, and $10 million to improve methane leakage measurements.

We will focus new attention on state grants for energy assurance and reliability, recognizing that many authorities and actions in this area depend upon the states. The FY 2016 Request includes $35.5 million to provide grants to state, tribal, and local governments to update energy assurance plans to address infrastructure resilience, as well as $27.5 million that is part of the Grid Modernization crosscutting initiative to provide competitive grants to states and multi-state entities to address electricity reliability.

Finally, while we move toward implementation of recommendations on the first installment of the QER on infrastructure, DOE will move forward on future installments of the 4-year QER. The Budget includes $35 million for the Office of Energy Policy and Systems Analysis to provide integrated energy systems analysis and follow-on QER support activities.

In addition to the longstanding major mission areas of nuclear security, science and energy, and environmental cleanup, emergency response is an important mission for the Department. While we have had an ongoing responsibility for nuclear and radiological incident response, the Department has intensified its efforts for energy infrastructure emergency response, working with FEMA. Our Budget proposes an increase from $6 million to $14 million for Infrastructure Security and Energy Restoration, the lead program for these responses. While the budget for this emerging responsibility is relatively small, it is an increasingly important focus.

Enhancing Collective Energy Security

The Department's work in energy security is modest in budget requirements but greatly important for the Nation. Particularly given the events in Europe and Ukraine, we have an increased global focus on collective energy security—energy security for the United States and its allies.

In the last year, we worked with the G-7 and the European Commission to achieve a G-7 Leaders Agreement on a new collective energy security framework. Led by our Office of International Affairs, we also worked directly with Ukraine to provided technical support in developing its first ever energy emergency management plan, especially for the winter. In December, we also signed a Memorandum of Understanding with Canada and Mexico to initiate improved coordination of North American energy data. Led by DOE's Energy Information Administration (EIA), this will help us develop stronger active collaboration moving forward.

To continue on this progress for collective energy security, the FY 2016 Budget Request includes $24 million for the Office of International Affairs. While the funding level is not large compared with other parts of the Department, the Office of International Affairs is taking on increased responsibility, as I just highlighted, and funding at this level is needed to fulfill its important mission and strengthen international energy technology, information and analytical collaborations.

Similarly, the Budget increases investment in the EIA to $131 million, in order to fill gaps in current energy data, including transportation of oil by rail and integrating energy data with Canada and Mexico. The EIA recently initiated a data reporting program on oil and natural gas production trends by region, and the requested increase is needed to continue with this and other improvements in our data collection, analysis, and reporting.

Last year, the Department also completed a 5 million barrel test sale for the Strategic Petroleum Reserve (SPR) to look at infrastructure challenges resulting in large part from pipelines now flowing in opposite directions from when the SPR was originally established. Through the test sale, we found challenges confronting the SPR's distribution system, and the FY 2016 Budget proposes an increase of $57 million above FY 2015 for the SPR to begin addressing the operational readiness issues found through the test sale to enhance distribution flexibility and reliability and to begin to address the existing backlog of deferred maintenance projects.

Strategic Partnerships with National Laboratories to Advance DOE Missions

The Department is continuing its focus on building the strategic partnership with the National Laboratories. DOE is a science and technology agency, and our efforts across all of our mission areas are heavily grounded in science and technology. The National Labs are a major core asset in executing our missions, and strengthening our partnerships is critical to our success.

We are doing that in a variety of ways. For example, DOE is engaging the laboratories very early on in our program planning. The National Laboratories Ideas Summit helped shape FY 2016 budget initiatives and was instrumental in forming a special consortium of 14 National Laboratories arranged to implement the crosscutting grid modernization research.

We also have begun using the National Laboratories' expertise in science and technologies in some of our major challenges outside of the science and energy arena. When faced with what looked like major problems with the cost and schedule of the Uranium Processing Facility (UPF) at the Y-12 National Security Complex in Oak Ridge, or the major problem we had at the Waste Isolation Pilot Plant (WIPP), we engaged Laboratory leadership to help reformulate our approach to those issues. In those two examples, Oak Ridge National Laboratory led the Red Team review and restructuring of UPF, and the Savannah River National Laboratory led the forensics effort to investigate the cause of the failure of the waste canister at WIPP.

The Laboratory Operations Board (LOB), a body that we put in place in 2013, performed the first-ever uniform assessment of general purpose infrastructure at all Laboratories and NNSA plants. That has led to identifying over $100 million in the FY 2016 Budget in new investments for priority general purpose infrastructure projects guided by LOB assessments, while also avoiding an increase in deferred maintenance.

Finally, we have developed new strategies to strengthen institutional capability of the National Laboratory system based on advice from the Secretary of Energy Advisory Board (SEAB)

Enhancing Impact: Crosscutting Initiatives in Key Technology Areas

The FY 2016 Budget expands the crosscutting initiatives introduced in the FY 2015 Budget designed to advance key technology areas that have multiple energy resource applications. Each crosscut reflects an integrated plan of work to optimize programmatic objectives by efficiently allocating resources. Through deliberate and enterprise-wide planning and coordination of these research efforts, the crosscutting initiatives will help bolster DOE's efforts to institutionalize enhanced program management and coordination across program offices, while accelerating progress on key national priorities.

The programs and budgets within the three mission areas include over $1.2 billion in crosscutting R&D across six initiatives focusing on: electricity grid modernization, subsurface technology and engineering, supercritical carbon dioxide technology, energy-water nexus, exascale computing, and cybersecurity. These initiatives are the product of a concerted coordination effort among all three DOE Under Secretariats and program offices across the Department in close collaboration with the National Laboratories.

The FY 2016 Budget continues to build on the five crosscutting initiatives established in FY 2015. The Exascale Computing initiative invests to make progress toward a thousand-fold improvement over current high performance computers. Grid Modernization supports technology development, enhanced security, and stakeholder support to enable evolution to the grid of the future. The Subsurface Engineering initiative invests in new wellbore systems, seismic research, and other areas supporting a wide variety of energy sources. The Supercritical Carbon Dioxide initiative establishes a 10 MWe-scale pilot Supercritical Transformational Electric Power facility aiming to increase the efficiency of power generation, and the Cybersecurity crosscutting initiative strengthens cybersecurity across DOE's federal and laboratory sites, and improves cybersecurity for the nation's electric, oil, and gas sectors.

The FY 2016 Budget also proposes one new crosscutting initiative, the Energy-Water Nexus. This initiative recognizes that the Nation's energy system uses large quantities of water, and the Nation's water system uses large quantities of energy,

and that DOE's coordinated science and technology efforts can contribute to the Nation's transition to more resilient energy-water systems.

Nuclear Security

The FY 2016 Budget Request provides $12.6 billion for the NNSA, an increase of $1.2 billion over FY 2015, to carry out our missions for the nuclear deterrent, nuclear nonproliferation programs, and propulsion for the nuclear Navy.

Effective Stewardship of the Nuclear Deterrent

The Request includes $8.8 billion for Weapons Activities, $667 million above FY 2015, to maintain a safe and effective nuclear deterrent while continuing to reduce the size of the active stockpile.

In pursuit of this mission, we have recently achieved a number of major accomplishments. We have, first and foremost, had another year of science-based certification of the stockpile as safe, secure, and effective without nuclear testing. It is important to remember the remarkable story that a science research program has enabled the paradigm to shift since nuclear testing ceased to allow us to consistently certify the stockpile as safe and reliable without testing, even as it shrinks.

In the major life extension programs, we have now passed the halfway mark in Life Extension Program (LEP) for the W76-1 warheads for the Navy, and our FY 2016 Budget Request of $244 million will keep us on track to complete the program in 2019. We have conducted successful first integration testing of the B61-12 LEP for the Air Force on or ahead of schedule, and the Request of $643 million supports delivery of the First Production Unit in 2020. By the end of FY 2024, completion of the B61-12 LEP will shrink the number of active and inactive weapons, reduce the mass of nuclear material used in these weapons, and allow us to retire the B83, the last U.S. megaton class weapon. Our Request of $220 million for the W88 ALT 370 supports delivery of the First Production Unit with conventional high explosives refresh by FY 2020.

This Budget supports the Nuclear Weapons Council decision to accelerate a new cruise missile capability, and the selection of the W80 as the warhead for the Air

Force's Long Range Stand-Off system (LRSO). The FY 2016 Budget Request includes $195 million to accelerate the program by two years, to be completed in 2025, in order to meet military requirements.

We have begun operations in the new Kansas City Responsive Infrastructure Manufacturing and Sourcing (KCRIMS) facility with half the footprint and an improved operating environment compared to the old environment. And at the National Ignition Facility, we have significantly increased the shot rate and achieved impressive advances in experimental results in closer alignment with modeling predictions.

As I mentioned earlier, we have used strategic partnerships with the National Laboratories to rethink some of our challenging projects. As a result of the Red Team review of the Uranium Processing Facility at the Y-12 National Security Complex in Oak Ridge, led by the Director of the Oak Ridge National Laboratory, and a similar review of the Chemistry and Metallurgical Research Replacement Facility (CMRR) capability at Los Alamos National Laboratory, we are developing a disciplined modular approach for both sites that will remove risks early in the process and build to a more rigorous budget and schedule. This rigorous process will be an important and recurring project management theme at the NNSA and across the Department of Energy—in particular, at the Office of Environmental Management.

Controlling and Eliminating Nuclear Materials Worldwide

The FY 2016 Budget Request includes $1.9 billion for Defense Nuclear Nonproliferation, $325 million above FY 2015, to continue the critical missions of securing or eliminating nuclear and radiological materials worldwide, countering illicit trafficking of these materials, preventing the proliferation of nuclear weapon technologies and expertise, and ensuring that the U.S. remains ready to respond to high consequence nuclear and radiological incidents at home or abroad, and applying technical and policy solutions to solve nonproliferation and arms control challenges around the world. The Request is a $75 million, or 4 percent, increase from the comparable FY 2015 enacted level after adjusting for a budget structure change moving counterterrorism efforts from the Weapons Activities appropriation to the Defense Nuclear Nonproliferation appropriation.

We have completed the removal or disposal of a total of 190 kilograms of vulnerable nuclear material, through bilateral agreements, and trilateral agreements with Russia and countries with material of Russian origin. Despite a difficult relationship at the moment, we are continuing to work with Russia to repatriate weapons-usable material to the United States or Russia.

In 2014, we obtained a pledge from Japan at the 2014 Nuclear Security Summit in The Hague to remove and dispose of all highly-enriched uranium and separated plutonium from the Fast Critical Assembly in Japan. We also helped prevent the illicit trafficking of nuclear and radiological materials, technology and expertise by installing 37 fixed and 22 mobile radiation detection systems worldwide.

The FY 2016 Budget Request reorganizes the Defense Nuclear Nonproliferation program into four business lines: Global Material Security; Materials Management and Minimization; Nonproliferation and Arms Control; and Nonproliferation Research and Development. We have also strengthened Counterterrorism and Emergency Response by consolidating these efforts with Nuclear Nonproliferation programs in one account. Together, these reorganizations create a clearer set of business lines for the nonproliferation programs and represent the full continuum of our nonproliferation efforts as we prevent, counter, and respond to global threats.

In FY 2015, the Congress appropriated $345 million to continue construction of the mixed-oxide (MOX) project at Savannah River. The FY 2016 Budget includes $345 million, which is the current services projection from the FY 2015 enacted level, while we complete congressionally-directed studies on plutonium disposition costs and alternatives.

Advancing Navy Nuclear Propulsion

The FY 2016 Budget Request includes $1.4 billion for Naval Reactors, $142 million above FY 2015, to support the Navy fleet and maintain progress on current efforts to refuel the land-based research and training reactor. The Request increases funding for Naval Reactor's core objective of ensuring the safe and reliable operation of the Nation's nuclear fleet (73 submarines and 10 aircraft carriers), constituting over 40 percent of the Navy's major combatants.

The Naval Reactors programs achieved some significant accomplishments this year. In 2014, we began integrated testing of the lead A1B reactor plant of the next-generation FORD-class aircraft carrier and provided technical resolution support for the nuclear fleet which steamed over 2 million miles.

The FY 2016 Budget provides $187 million to continue development of the advanced *Ohio*-Class Replacement Reactor, and $133 million to initiate refueling of the Land-based Prototype reactor. We also provide $86 million to continue construction of the Spent Fuel Handling Recapitalization Project.

Cleaning up the Cold War Nuclear Weapons Legacy

The FY 2016 Budget Request includes $5.8 billion for Environmental Management, $43 million below the FY 2015 enacted level, to position DOE to meet the nation's Manhattan Project and Cold War legacy responsibilities. DOE is responsible for the cleanup of millions of gallons of liquid radioactive waste, thousands of tons of used nuclear fuel and special nuclear material, disposition of large volumes of transuranic and mixed/low-level waste, huge quantities of contaminated soil and water, and deactivation and decommissioning of thousands of excess facilities.

I will discuss in a moment the difficult challenges we face with some of our remaining Environmental Management projects. But I would like to start by pointing out that when the program started, there were 107 sites to be closed, and we have cleaned up all but 16 sites. To be sure, the remaining sites are not the simplest to remediate; however, we started with over 3,000 square miles to remediate, and we're down to only 300 square miles. And so, by some metrics, we have cleaned 90 percent of our total footprint. However, it will be decades before we finish the most difficult remaining sites.

Though we are down to some of the most difficult sites, progress is steady. Last year, we completed demolition of the K-25 facility at Oak Ridge, the largest demolition project DOE has ever undertaken. We have converted 15 million pounds of liquid waste into solid glass at the Defense Waste Processing Facility at Savannah River, enabling closure of six high level waste storage tanks.

We have put forward and are beginning to implement an alternative phased approach to completing the Hanford Waste Treatment Plant (WTP). We have cleaned up 479 square miles of the 586 square mile area at Hanford, including 90 percent of the River Corridor.

Going forward in FY 2016, recovery of the Waste Isolation Pilot Plant in New Mexico is one of our high priorities. The FY 2016 Budget includes $248 million to implement the WIPP recovery plan, leading to initial resumption of waste emplacement in the first quarter of calendar year 2016. The FY 2016 Budget will also support continued operations of the Integrated Waste Treatment Unit at Idaho and work towards closing the tanks.

With $1.4 billion for the Office of River Protection, we will move forward on our phased approach to begin vitrifying low activity waste early next decade. The Budget moves forward with construction of the Low Activity Waste (LAW) facility at the Hanford Waste Treatment Plant, including design of a new pretreatment system required for our phased approach. We will also continue technical issue resolution at the site, and we will bring the Plutonium Finishing Plant (PFP) at Hanford, once the highest risk nuclear facility at Hanford, down to slab-on-grade by the end of FY 2016.

Finally, we will continue construction and prepare for commissioning of the Salt Waste Processing Facility at Savannah River, which is on schedule to complete construction by December 2016.

Management and Performance: Improving Efficiency and Effectiveness

Building on the Department's FY 2015 emphasis on management and performance, the FY 2016 Budget moves forward on initiatives that continue to identify and institutionalize improvements across the DOE enterprise.

In the Department's efforts to improve management and performance, we have adopted project management reforms, including strengthening the Energy Systems Acquisition Advisory Board (ESAAB) from an ad hoc process into an institutionalized regular process for situational awareness on project progress and issues, as they arise. ESAAB will be supported directly by a Project Management Risk Committee, which brings together DOE experts for a continuous look at the

risk profile of major projects and issues. We have also taken steps to improve the project peer review process and institutionalize other project management reforms.

We have also continually worked to improve management, increase efficiency, and support diversity on a number of fronts. We have recruited 30 high-level Ambassadors from industry, academia, and nonprofits to increase participation of minorities in energy. We have resolved hiring issues at the Bonneville Power Administration, providing additional Human Resources training and restoring hiring authority. The Department's management and operating contractors have reduced pension plan liability by $100 million through lump sum buyouts. Our management and operating contractors have also established Health Reimbursement Accounts at 13 sites for their medical-eligible retirees, reducing long term financial statement liability by $2.8 billion.

Going forward, the Budget includes $25 million for the Office of the Human Capital Officer to implement a new Human Resources service delivery model to streamline our HR model and eventually consolidate 17 current service centers to five key delivery centers. We will also implement a new Energy Jobs Council to improve calculation of energy jobs data and strengthen technical support for state workforce development programs. We will also continue to strengthen Departmental cybersecurity programs, part of the Cybersecurity crosscutting initiative, through an enterprise-wide cyber council established in 2013 for securing personal data, our nuclear security data, and the privately-owned energy infrastructure.

Advancing the President's Vision: Implementing DOE's Strategic Plan

In conclusion, we have much to do to advance the President's vision and implement DOE's Strategic Plan.

We will continue implementing the President's Climate Action Plan, to reduce emissions at home and around the globe.

We remain committed to our all-of-the-above energy strategy, to encourage innovation, create jobs, enable economic growth, and contribute to domestic manufacturing and net exports.

We must maintain leadership in basic research in the physical sciences—and increasingly in the life sciences, develop the next generation of computation technology, and develop and maintain world-class scientific user facilities.

We will continue to maintain a safe, secure, and effective nuclear weapons stockpile in the absence of testing, and manage the infrastructure needed to meet national security requirements.

We must continue to reduce the global nuclear terrorism threat through measures to identify, control, and eliminate nuclear weapons worldwide.

We will address the legal and moral imperative of cleaning up legacy waste to protect human health and the environment.

We will strengthen DOE and its national missions through cross-cutting initiatives that leverage the science, technology, and engineering capabilities across programs and National Laboratory partners.

And we will continually improve DOE effectiveness and efficiency through project management reform and constant attention to maintaining a safe and secure workplace.

Thank you, and I would be pleased to answer your questions.

Mr. SIMPSON. I thank you.

And during your statement, we have had the arrival of the ranking member. Snow has kind of slowed a lot of people down this morning.

So I will yield to you for your opening statement, if you would like.

Ms. KAPTUR. Thank you, Mr. Chairman. I wish it had only been the snow. Unfortunately, we had prior scheduled events on the other side of town prior to this meeting being scheduled.

So I am just very grateful to Ranking Member Lowey for being here. And I thank the Secretary, the very able Secretary, for joining us this morning. Thank you, Mr. Chairman and members.

Secretary Moniz, it is always great to see you. And I want to say I greatly appreciate your recent visit to Ohio and your willingness to work with this subcommittee to address the energy challenges that are faced by our Nation, including the region that I represent, the Great Lakes.

At the top of the list for America and for our people is job creation, and, obviously, energy independence is a critical underpinning of that very important objective. In another realm, assuring a modernized nuclear deterrent is an essential part of this bill, as well, and we thank you for your great talents applied to that end.

I appreciate several of the proposals to meet our Nation's needs and, in particular, the administration's proposal for good modernization, as well as the $200 million increase for the advanced manufacturing program, which could certainly do even more to help regions such as I represent in the industrial heartland.

The last decade has seen America's heavy-energy-consuming industries struggle. And between 2000 and 2010, our Nation lost an additional 5 million manufacturing jobs, amounting to nearly one-third more of its manufacturing employment. Over the last 35 years, we have lost two-thirds of the Nation's manufacturing base.

I am encouraged to note that, of the 100 largest metro areas that currently hold 70 percent of advanced manufacturing jobs, 2 are within my district. Cleveland ranks 27th and Toledo 30th in the share of overall manufacturing jobs in this sector.

America has hotbeds of innovation, but if we hope to remain globally competitive in manufacturing, we must seize new opportunities presented to us, including a full consciousness of the energy underpinning of our industrial heartland. And I know you fully understand that.

Even as we face another constrained budget, we must keep focused on the pairing of innovation with employment growth and energy transformation. And I look forward to discussing further job-creating opportunities at the Department of Energy through efforts such as modernizing our energy grid, retrofitting buildings, and supporting efficient and innovative manufacturing technology companies.

Our historic reliance on foreign energy not only serves as a grave national security concern, in my opinion; it also is a severe strain on our economy. The $2.3 trillion that our country has ceded importing foreign oil over the last decade alone, $2.3 trillion, has enriched some of the least democratic places on Earth at the expense of our own citizens.

Today, we are presented with the opportunity to rid our country of this burden. We are already producing more oil domestically than we import, and I thank you for your leadership on that front. Congratulations to you and the Obama administration for that effort.

Recent projections show that by 2035 America will be able to meet 97 percent of our energy needs through domestic production and an all-of-the-above strategy. What a great slogan for that effort. What a glorious moment that will be for the country. And I would like to cut in half the time that it requires us to reach that goal.

Through continued funding to accelerate renewable energy developments with that all-of-the-above strategy, we could achieve a net positive balance of trade in our energy sector—a goal worthy of our aspiration and one that can ensure domestic job growth into the future.

Our world-class national labs continue to serve as drivers of innovation, America's greatest resource for staying globally competitive. Innovation remains one of the few lasting competitive advantages for many firms and their host communities in the advanced manufacturing sector, yet its speed of innovation and complexity requires that we ratchet up demand for new strategies and support that we must continue to stay on the top globally.

I was very interested in page 15 of your testimony where you talk about the energy and water confluence, that nexus. I am totally in agreement with that.

While developing our approach to the energy future of our country, we must also focus on commercialization efforts with a strong bias toward improving American manufacturing. And I cannot emphasize this point enough. If the Department is fostering technological advances or breakthroughs for products, it must do so in a way that contributes to American manufacturing and the jobs and products that are manufactured domestically.

I appreciate your visit to ArcelorMittal in Cleveland, for example, and First Solar and Owens Corning in western Ohio. That shows the administration's commitment to this sector.

We also have a photo I would like to present to you of your visit there. You made centerfold on the business page. And I can tell you the dozens and dozens of companies that were a part of that effort.

And I am going to have Ryan here from our staff—you made it in Ohio, Mr. Secretary; this is really excellent—I present it to you as a memento of this hearing.

Let me also point out that communities blessed with national laboratories must recognize the tremendous asset they possess in pushing innovative and creative ideas.

You look a lot better on that picture than I do, by the way.

Our Nation would be wise to recognize them as national gems.

And for those communities not lucky enough to have local labs and all the intellectual power they bring regionally, I am interested in identifying opportunities to extend the positive impact labs can offer in assistance to communities, places, and businesses that struggle to meet their own energy needs in vital segments of our economy.

Mr. Secretary, I am eager to discuss how this budget for 2016 meets the needs of many energy and national security challenges we face and strengthens our Nation's job-producing base.

Thank you so very much, Mr. Chairman, for this time. I appreciate your courtesy and look forward to the full hearing today.

Mr. SIMPSON. I thank the gentlelady.

We are also fortunate to have the chairman of the full committee, or the big chairman, as we call him, Hal Rogers from Kentucky.

Mr. ROGERS. Thank you, Mr. Chairman.

Mr. Secretary, welcome.

Mr. SIMPSON. Thank you.

Mr. ROGERS. Your department's efforts are critical to our economy and to our national security, but the importance of your mission does not diminish our responsibility to budget sensibly and to prioritize programs of import.

I want to echo Chairman Simpson's concern that the administration's request for 2016 discretionary funding exceeds the statutory cap by $71 billion. Here on this committee, we have to abide by the Budget Control Act and the budget enacted by Congress. Unfortunately, your request is just not realistic. We are looking forward to hearing from you today about how we should make the difficult decisions necessary to correct this shortcoming in your request.

In so doing, it is my belief that we set priorities in this budget that will set us on a path toward energy independence, particularly with household power bills on the rise, volatile unrest in energy-producing regions overseas, and record cold temperatures, requiring coal-fired power plants to run on overtime.

We have countless opportunities to shore up our energy security in this country, and this administration seems determined to disregard just about every one of them. Just 2 days ago, the President made the incomprehensible decision to veto the Keystone XL Pipeline project that would put thousands of Americans to work, not to mention the energy that would be produced.

The President's rejection of this project, despite overwhelming bipartisan and industry support, along with that of the American people, is inconsistent with the all-of-the-above energy strategy you are highlighting in your statement, which is necessary to keep our energy economy diverse, inexpensive, and reliable.

While this administration would like us to think it is serious about pursuing an all-of-the-above energy policy, its actions plainly undermine that rhetoric. The coal industry is fighting every day to produce the cheap, reliable energy that our economy demands while shouldering tremendous burdens imposed by this administration's regulatory bodies.

While this administration is hard at work writing new rules that would ban the initiation of new power plants, shutter existing ones, and leave thousands of coal miners out of jobs, the coal industry is focused on investing in innovative technologies that will make the Nation's most abundant source of energy more efficient.

Each and every year, this administration has produced budgets that slash funding for coal-related research and development, and Congress has sent a clear message by consistently restoring these much-needed programs. While I am pleased to see the Department has requested a larger budget for the coal CCS and power system

than it had previously, I am disappointed that, once again, fossil fuels are being handed the short end of the stick.

While renewable energy receives a healthy $786 million increase, 41 percent increase, fossil energy investments are again reduced, this time by $11 million. Investing in CCS technology and fossil fuel research and development is critical, and this request does not demonstrate a commitment to achieving commercially viable clean coal in the near term.

But the importance of the cheap, reliable energy that coal provides is not completely lost on the administration. In fact, the President recently committed $1 billion in taxpayer dollars to invest in clean coal projects in China, projects being pursued through your department. But, not surprisingly, the administration can't make the same commitment to the future of our energy security here at home.

If this department's priority is truly establishing an all-of-the-above energy policy for the future, as you have stated many times in recent weeks, then I, for one, cannot discern the Department's accompanying strategy for coal, our Nation's most abundant natural resource going forward.

There is no denying that massive regulatory requirements are pushing this industry out of existence. But if the goal of these regulations is increased levels of efficiency, then where are the accompanying investments from your department that will ultimately enable the industry to accomplish that goal? I certainly do not see these kinds of investments laid out in this budget.

As you well know, these topics are critical to the future of our energy security, and I look forward to hearing your testimony and how you will be working to advance a truly comprehensive energy strategy in this country that includes coal.

Thank you, Mr. Chairman.

[The information follows:]

Chairman Hal Rogers
House Committee on Appropriations

Fiscal Year 2016 Budget Hearing – Department of Energy
February 26, 2015
Opening Statement As Prepared

Mr. Chairman, thank you for yielding. Secretary Moniz, I appreciate you taking the time to be here today and I welcome you back to the Energy and Water subcommittee.

The Department of Energy oversees tremendous investments in a commodity that touches nearly every issue of national importance: energy. Whether readying our Navy's nuclear fleet or modeling technologies that will yield more efficient and reliable power sources – your Department's efforts are critical to our economy and our national security.

The importance of your mission, however, does not diminish our responsibility to budget sensibly and to prioritize programs of import. I must echo Chairman Simpson's concern that the Administration's request for Fiscal Year 2016 discretionary funding exceeds the statutory cap by $71 billion. Here in the Appropriations Committee, we must abide by the Budget Control Act and the budget enacted by Congress. Unfortunately, your request is not realistic – and we're looking forward to hearing from you today about how we should make the difficult decisions necessary to correct this shortcoming in your request.

In so doing, it is my belief that we set priorities in this budget that will set us on a path toward energy independence – particularly with household power bills on the rise, volatile unrest in energy-producing regions overseas, and record cold temperatures requiring coal-fired power plants to run on overtime. We have countless opportunities to shore up our energy security in this country, and this Administration seems determined to disregard just about every one of them. Just two days ago, the President made the incomprehensible decision to veto the Keystone XL pipeline, a project that would put thousands of Americans to work. The President's rejection of this project – despite overwhelming bipartisan and industry support, along with that of the American people – is inconsistent with the "all-of-the-above" energy strategy you're highlighting today, which is necessary to keep our energy economy diverse, inexpensive, and reliable.

While this Administration would like us to think it is serious about pursuing an "all-of-the-above" energy strategy, its actions plainly undermine its rhetoric. The coal industry is fighting every day to produce the cheap, reliable energy that our economy demands while shouldering tremendous burdens imposed by this Administration's regulating bodies. While this Administration is hard at work writing new rules that would ban the initiation of new power plants, shutter existing ones, and leave thousands of coal miners out of a job, the coal industry is focused on investing in innovative technologies that will make our nation's most abundant source of energy more efficient.

Each and every year, this Administration has produced budgets that slash funding for coal-related research and development, and Congress has sent a clear message by consistently restoring these much

needed programs. While I am pleased to see the Department has requested a larger budget for the Coal CCS & Power System program than it had previously, I am disappointed that, once again, fossil fuels are being handed the short end of the stick. While renewable energy receives a healthy $786 million increase, a 41% increase in fact, fossil energy investments are once again reduced, this time by $11 million. Investing in CCS technology and fossil fuel research and development is critical, and this request does not demonstrate a commitment to achieving commercially viable clean coal technologies in the near term.

But the importance of the cheap, reliable energy that coal provides is not completely lost on the Administration. In fact, the President recently committed $1 billion in taxpayer dollars to invest in clean coal projects in China – projects being pursued through YOUR Department. But not surprisingly, this Administration can't make the same commitment to the future of our energy security at home.

If this Department's priority is truly establishing an "all-of-the-above" energy policy for the future, as you have stated many times in recent weeks, then I, for one, cannot discern the Department's accompanying strategy for coal, our nation's most abundant natural resource, going forward. There is no denying that massive regulatory requirements are pushing this industry to the limit. But if the goal of these regulations is increased levels of efficiency, then where are the accompanying investments from your Department that will ultimately enable the industry to accomplish this goal? I certainly do not see these kind of investments laid out in this budget.

As you well know, these topics are critical to the future of our energy security. I look forward to hearing your testimony and hearing how you will be working to advance a truly comprehensive energy strategy in this country that includes coal. Thank you.

#####

Mr. SIMPSON. Thank you. And I appreciate that opening statement and will now turn to questions.

And I would ask the chairman if he would like to begin. I know you have a very busy schedule, as does Representative Lowey.

Mr. ROGERS. I will yield to the ranking, Chairman.

Mr. SIMPSON. Okay.

Mrs. Lowey.

Mrs. LOWEY. Thank you very much for your courtesy. We feel like we are on roller skates these last few days.

And, again, I appreciate the opportunity to have the Secretary before us.

I have two questions. First, a brief question on crude oil shipments.

The recent train derailment in West Virginia has once again focused attention on the relative merits of moving oil by pipeline or rail. Recent reports by the AP and The Washington Post, among others, have detailed some of the issues.

While I know much of the issue is one of transportation standards, does the Department of Energy have an appropriate role in either data collection, research and development that could improve our understanding of the technical issues?

And is the Department exploring technologies to treat Bakken or other highly combustible crude to reduce its volatility before it is shipped?

Secretary MONIZ. Thank you.

Well, as you have said, of course, there is this generally accepted fact that with pipeline transport there tend to be more spills but with trains there are more safety concerns.

On the train shipments, a few things that we are doing. First, our Energy Information Administration will now be issuing a new data set, which will detail oil movements by rail. That has not been the case until now, but we will start that quite shortly.

Secondly, with regard to, if you like, technical assistance, we are working with DOT, FMSA, and we have a project with our national laboratories that was going through a detailed project to understand the qualities of light crude oils, including Bakken, and what the implications are for safety. So, for example, accidents scenarios, we have in our laboratories not only, kind of, the chemistry part but things like the test stands for looking at accident scenarios, et cetera. So that is another area that we are looking at.

We have many other projects of relevance to the whole production of the oil, but with regard to the safety issues, those are some of the things that we are doing. And we are in close technical support of our sister agencies.

Mrs. LOWEY. Thank you.

And the second question: It has become increasingly clear that our Nation's electricity grid is vulnerable to cyber threats. Addressing this threat is critical to the security and reliability of the Nation's electric grid. This is made particularly important given the grid is arguably the most complex and critical infrastructure that other sectors depend upon to deliver essential services.

How does the Department work with the Department of Homeland Security, industry, and other government agencies to reduce the risk of energy disruptions due to cyber attacks? Does this inter-

agency process that adequately mitigates the risk to our current electricity grid—is this adequate?

Does the U.S. have cybersecurity standards to provide a baseline to protect against known vulnerabilities? And what kind of public-private partnership is the Department involved in to accelerate cybersecurity efforts for the grid of the 21st century?

And if you can just sum up, what are the most pressing issues we should be addressing with regard to cybersecurity and the threats that are facing us?

Secretary MONIZ. It is a complex question.

First of all, the interagency, I think, under the leadership of DHS, is working. And, in that system, Department of Energy is designated as the sector lead for the energy sector. So when it comes to cyber specifically for the energy sector, then DOE is the lead.

In the fiscal year 2016 budget, we have a crosscutting, meaning multiple office, budget of approximately $300 million for cybersecurity. This has been going up consistently because of the escalating threat. And it is escalating.

The grid modernization project will have a large cyber component in terms of research, but in addition to the research and the issue of providing resilience against cyber threats through new technology approaches, et cetera, the public-private partnership element that you mentioned is very strong and very important.

So our Deputy Secretary chairs a group that meets regularly with EEI, with utility CEOs specifically on cybersecurity. And as an example of what we have done, we have selectively issued security clearances to leaders in that industry so that we can share appropriate information that is not available publically, in terms of the threat vectors and how they need to respond to be protected.

An important issue I just want to emphasize and a constant theme is, with cyber protection, you simply cannot be static. So it is always a constantly evolving threat, and it has to be a constantly evolving defense.

Mrs. LOWEY. Thank you.

And thank you very much, Mr. Chairman.

Mr. SIMPSON. Mr. Chairman.

Mr. ROGERS. Thank you, Mr. Chairman.

The EPA will issue final rules on carbon standards for existing and new power plants this summer, they say. These are onerous rules, they are unrealistic rules. But they will require coal-fired plants to capture and store underground about 40 percent of the carbon dioxide that they produce.

In order to comply with these extremely costly and, I think, impossible regulations, companies are going to have utilize carbon capture and sequestration technology, CCS. The elephant in the room, Mr. Secretary, is that technology is not available commercially. You can't get it. And so companies are going to be required to do something that is impossible or shut down. I think I know what the strategy is, it's to shut them down.

It is like the right hand, the EPA, is not talking to the left hand, Department of Energy. Sadly, I see no leadership from your department in making the requisite investments to move that technology forward in a meaningful and timely way. What I consistently see

instead is a budget request with an astronomical increase for renewable energy research and inadequate investments in the fossil energy program, the one that we now have. This tells me that the administration's goal is not really an all-of-the-above portfolio with clean coal; it is to take coal totally out of the equation.

Am I in error when I say that CCS technology is not now commercially available?

Secretary MONIZ. Yes, it is commercially available. But, with permission of the two chairs, may I give a slightly more expansive answer, going back to your opening statement, and talk about the coal picture broadly?

Mr. ROGERS. That is what you are here for.

Secretary MONIZ. It may take more than 5 minutes, but I think it is very important and central to the discussion.

I would like to say that, first of all, I think we have a very, very strong program with coal.

But before I go to coal specifically, there is much said about the increase, the large increase and the large size of our so-called renewables budget. I want to emphasize, it is an organizational issue. The EERE budget that is being referred to is actually three programs. There is an energy efficiency program, there is a renewables program, and there is a sustainable transportation program. They are really distinct activities. And then there is nuclear and fossil, et cetera.

If I may quote the budget numbers, fiscal year 2015 or fiscal year 2016—but fiscal year 2015, energy efficiency is $642 million. That includes things like weatherization programs. It is not just R&D. Renewable energy, $456 million; transportation, $602 million; fossil energy, $561 million; nuclear energy, $833 million. That was just the R&D of fossil. The fossil budget is higher. It includes petroleum reserves, et cetera.

Those are all very comparable budgets. Electricity office, $147 million. ARPA–E, $280 million. So the fossil energy budget, first of all, for R&D is quite comparable and larger than many, in fact, of our programs.

If I go to coal, issues addressing coal are multiple. First of all, in our basic science programs, things like the advanced materials work is critical for issues like ultra-supercritical plants, even pushing the efficiency very, very high. High 40 percent looks possible.

And you yourself mentioned the increase we request in the fossil budget for the capture R&D. ARPA–E has capture R&D. They tend not to be counted. There is $50 million of innovative work in carbon capture.

We have our demonstration projects, $6 billion, four of them operating or close to operating. Some will not make it across the finish line; we know that. Also, in Canada, we have operating the Boundary Dam project, which is a coal plus post-combustion capture project.

In our loan program, we have an $8 billion solicitation out right now for fossil energy projects that reduce emissions. We have the new tax credits proposed out of Treasury, a $2 billion subsidy support for CCS infrastructure, and a sequestration tax credit for carbon put underground. This is a very, very broad program.

We have a power-plus program that looks to help communities, coal communities, in transition. And I want to emphasize, certainly up to now, the reduction in coal use has mainly been a market-driven response to the low natural gas prices.

With regard to China, our program with China and the one that the President talked about our expanding, we will spend $10 million a year in supporting United States researchers and companies. That will be multiplied by four in a clean energy research center collaboration with China.

And as far as availability of technology, you can buy it today with a warranty. The Boundary Dam project I mentioned, the Petra Nova project being built in Texas. There are, of course, for new plants alternatives like gasification plants. The Great Plains plant in North Dakota has already supplied 20 megatons of CO_2 to Canada for enhanced oil recovery. It went across the border, but it was an American plant that captured it.

This sounds to me like a pretty strong program. One project, unfortunately, a few weeks ago we had to start—go into structured closeout, the FutureGen project, which would have been an oxy-combustion plant. It is a very important technology I still hope we support somehow, but that plant ran out of time because of the ARRA funding.

So we are very serious about advancing coal—enable coal as a marketplace contributor in a low-carbon world of the future. So that is the breadth of the program. It is a very—very, very many components.

Mr. ROGERS. Yeah. Reclaiming my time.

Well, the 9,000 laid-off coal miners in my district alone, laid off because of the policies of this administration, are looking to you to make the use of coal commercially usable.

I mean, when the EPA requires that existing power plants must capture 40 percent of the carbon dioxide they produce, when that machinery is so exorbitantly expensive or nonexistent, it puts these coal companies and the utilities in a box they can't get out of, and you are, in effect, rendering the use of coal impossible. I beg you to change your policies.

Quickly, Mr. Chairman, let me switch gears very briefly. We were talking about the grid a moment ago and the reliability of the grid itself. I am concerned about whether or not we can generate the power during, especially, peak load times. With the closures of all of these power plants coming on stream here next year, you are going to have brownouts and blackouts, in my judgment, not because of the grid but because of the generating capacity that you are shutting down.

What do you think about that?

Secretary MONIZ. Well, clearly, the issues of reliability need to be looked at constantly and——

Mr. ROGERS. Liability?

Secretary MONIZ. Reliability. I am sorry.

Mr. ROGERS. Okay.

Secretary MONIZ. And, by the way, Mr. Chairman, before I forget, I should say, I would be delighted, of course, to come by and have a longer discussion in terms of all of these coal-oriented programs. I would be very happy to do that.

Mr. ROGERS. Thank you.

Secretary MONIZ. With regard to generation, again, a major dynamic has been that the very low cost of natural gas has certainly hit the coal sector and, I might add, the nuclear power sector. We have had five, six plants shutting down, particularly in the deregulated parts of the country, nuclear plants, with the low gas price. I mean, that has been the dominant reality. It is the natural gas prices, which even went below $3 for some time.

And the natural gas plant, I just might observe, in terms of construction—I mean, most of the construction recently in the United States has been natural gas plants and wind. Those have been the two major new capacity additions. And the natural gas plants have the advantage of, by far, the lowest capital cost per installed megawatt.

So the combination of the low capital cost and the low fuel cost has obviously increased the gas market share quite dramatically.

Mr. ROGERS. Thank you, Mr. Chairman.

Mr. SIMPSON. Let me ask you, how long do you expect those low natural gas prices to exist? Does the Department make a prediction of that?

And what is going to happen to those natural gas prices when, I suspect, there will be additional regulations on fracking and other types of things?

Secretary MONIZ. Well, first of all, the EIA does make projections about gas prices, oil prices, et cetera. You go to the bank with those at your own risk. But, certainly, the current expectation, with regard to natural gas, is that we will continue to see growth for quite some time, getting up above 30 trillion cubic feet per year. This is an incredible amount of gas. So right now, you know, we see no reason to think that there would be significant upward pressures, at least, let's say, for the rest of this decade, if not longer.

Now, that does not include, of course, localized price spikes. In my part of the country, New England, with a lack of sufficient infrastructure, and when the cold weather comes, I mean, we have had spikes go up to $60, $80. But that is not a systemic—you know, a sustained price.

So, you know, we tend to be thinking in terms of the $4 level as being something that is relatively stable. But it is always risky.

Mr. SIMPSON. On another subject, Mr. Secretary, I understand, in talking with you and watching the television, that you have recently traveled to Geneva on Saturday to join Secretary Kerry in negotiations with Iran over its nuclear program. This is an important issue, and I am glad that you are engaged.

Can you explain to the subcommittee, to the extent that you can in an open hearing, your and the Department of Energy's role in these negotiations? And is this a one-time role, or is this going to be a continuing responsibility for the Department?

Secretary MONIZ. Thank you, Mr. Chairman.

Well, first, let me say that, while this was my first engagement with the negotiating team, I should emphasize the Department has been engaged, frankly, from the beginning. By its nature, many of the issues relative to the future Iran nuclear program are fairly technical in nature. The repository of nuclear expertise is in the Department of Energy and its laboratories. In fact, again, actually,

Oak Ridge and Livermore, in this case, have been particularly strongly involved. And so we have been supporting that consistently.

Now that the negotiations are, presumably—since both sides have said we need to settle it in March, they are getting to that point where the intersection of the, kind of, policy and technical worlds are coming together. That is why I was asked to join Secretary Kerry in the negotiation. Whether that happens again, we will see.

Okay. I think I will just leave it there. I would just say that we did make—I would say, you know, we made some progress, but there is certainly a long way to go in a fairly short time.

Mr. SIMPSON. Thank you.

Secretary MONIZ. It is a very important issue, however.

Mr. SIMPSON. It is.

Secretary MONIZ. And we are very pleased to provide the support and, me, personally, to support Secretary Kerry in the negotiations.

Mr. SIMPSON. On another subject, we have heard of many linkages between this budget request and the forthcoming Quadrennial Energy Review, the QER.

As the first QER that the Department has conducted, I am curious as to the players that came together to produce the QER. How did this process unfold? How did the Department solicit input from outside organizations? And how does the QER play into the long-term strategic goals of the Department of Energy?

Secretary MONIZ. Thank you.

Yes, the QER is a massive undertaking, frankly, because it is trying to bring together agencies almost across the entire government, frankly, because so many have energy equities. The blueprint was laid out a few years ago in a report of the President's Council of Advisors on Science and Technology, which I happened to serve on at the time, and I happened to actually co-chair the group that recommended this.

The way it is implemented I want to clarify. It is chaired out of the Executive Office of the President because, frankly, that is where the convening power resides. But the Department of Energy—and we have built up, as you know, a powerful policy and analysis office—we function as, essentially, the executive secretariat and manage the analytical work.

Secondly, the decision was made that the first year would focus on energy infrastructure, transportation, storage and distribution of energy, electricity and fuels. And we recognized from the beginning that States and regions play a huge role, not only in implementing the program but in having very different needs—needs and opportunities. So we had 13 regional meetings across the country on all the different subjects relating to energy infrastructure. So those inputs were critical, including working with State organizations like NASIO and NARUC, et cetera.

The QER, we are a little bit behind schedule. We had hoped to have it at the end of January. It will probably be January 75th or something when we finish. But, frankly, we are in the interagency convergence process.

Several areas—it won't surprise you that there will be discussions about the petroleum reserve. We learned a lot last spring in

our test sale, in terms of distribution challenges. There will be a lot on the grid. And, in fact, the $356 million proposal in fiscal year 2016 is part of that, clearly. And we think, by the way, that investments of that scale will be needed for a decade to really get to where we want to go in terms of the grid.

There will be discussions about resilience of energy infrastructure. Certainly, coastal infrastructure is an example where we are seeing lots of problems, but there are others. And then what we call related infrastructures—actually, trains, inland waterways, a lot of challenges—those are not areas of Department of Energy responsibility, but they are government areas which are very important for the energy system.

In fact, I will just mention that, with our energy boom, especially in oil, these related infrastructures and the energy infrastructures are being taxed. And that will be a major focus of the QER.

We will come forward with a whole bunch of pretty specific recommendations for going forward.

Mr. SIMPSON. Thank you.

Ms. Kaptur.

Ms. KAPTUR. Thank you, Mr. Chairman.

Mr. Secretary, on page 5 of your testimony, you talk about the all-of-the-above energy strategy and the Department's Loan Programs Office having issued loan guarantee solicitations for innovative technologies in four areas: $4 billion in the renewable energy and energy efficiency area; double that, $8 billion, in the fossil energy area; $12 billion in the nuclear energy arena; and $16 billion for advanced vehicle technology manufacturing.

When I look at where America hemorrhages jobs, I use our trade deficit as my measure. And our chief category of trade deficit is imported oil. Our second chief category of deficit is imported automobiles. So I am very interested in your prioritization there.

And I wanted to ask you, in terms of these loan programs and the guarantees, how would you explain to the American people some of the solicitations that you are seeing, where you see innovation in those fields to help move America forward? What are some of the most promising technologies that you have seen that you can speak about here this morning? Give us a sense of the future.

Secretary MONIZ. Well, if I can start with the loan program specifically—is that where I should start?

Ms. KAPTUR. Yeah. And the sectors that you talk about, the——

Secretary MONIZ. Yes,

Ms. KAPTUR. Renewable energy and energy efficiency, then fossil energy, then nuclear, and then advanced vehicle technology manufacturing.

Secretary MONIZ. Uh-huh. Uh-huh. So——

Ms. KAPTUR. These obviously are—the Department has prioritized these. They are looking for answers. And you are seeing some potential. Could you——

Secretary MONIZ. Yes.

Ms. KAPTUR [continuing]. Tick off some of what you see?

Secretary MONIZ. Maybe what I should do is, for each of those four areas, I can give an example of maybe——

Ms. KAPTUR. Yes.

Secretary MONIZ. [continuing]. What has been done and what we are looking at going forward. Because there is $30 billion already in play and then $40 billion, as you stated, in additional authority.

So if you take the renewables, for example, a great example is that the program, especially in 2009 when there was—the whole point was that debt financing was very, very difficult to come by during the period of the recession. And so, for example, the program kickstarted the utility-scale photovoltaic business in this country. There was none. The loan program helped with the first five. There are now 17 additional ones with purely private financing.

So that is the model that we have in mind, to kind of—we kickstart. We don't want to just keep funding more—you know, supporting more of those with loan guarantees. Then they go into the marketplace. And there are other technologies, as well.

Going forward, I want to make clear, the calls are broad. Anything that comes forward that pushes the technology, in this case in renewables and efficiency, is there. But examples could be new areas, things like micro, small hydro, which has a substantial opportunity, we believe, in the United States, where very little has been done. It depends on people to come forward. We are not picking the area. Combined heat and power, on the efficiency side, which also can be in the fossil solicitation, as well, there is an area with still great potential. And here would be new—pushing the technology with new hybrid technologies, for example.

On vehicles, if I go to vehicles, in terms of the past, two examples: One was the support for this country's first all-electric vehicle manufacturer, Tesla. That was nearly a half-a-billion-dollar loan guarantee. The loan, it was paid back completely. They are moving forward.

But we also supplied a $6.5 billion loan to Ford to retool 13 plants in—I forget how many States, 6 or 10 States, something like that, including in your part of the country. And that has been a huge success, again, in terms of manufacturing EcoBoost engines and aluminum-clad F–150s and this kind of a thing.

Going forward, we think the future of that program is going to be less auto manufacturers as opposed to auto parts suppliers. It could be low-resistance tires, it could be the new materials for lightweighting—many, many possibilities.

Those are a couple of—well, okay, on fossil, looking forward, there will—again, CHP is one example, combined heat and power, carbon sequestration. We could imagine projects that maybe capture some of the methane that is being released in many production operations, using it effectively.

Many, many possibilities. We are open for business for any technologies that fit those categories, lower emissions, push the technology, and need a little bit of support on the debt-financing side to go forward.

If I may make one more comment—I am sorry—but we are also changing the nature of many of our commitments as we go forward, in the sense that, initially, especially in the recession period, the loan program essentially covered the entire debt needs of the project. Now, as we go forward, we want to go into more and more co-lending with commercial institutions. Partly, it stretches the

money out, shares the risk, et cetera, but mostly because we think, by bringing those commercial institutions into these areas, they will then be the ones who pick it up completely in the private sector.

Ms. KAPTUR. I really appreciate your answer this morning. You are just so capable. Our country is fortunate for your service, Mr. Secretary, really.

On the automotive front, I probably represent the most auto-impacted district in America. I represent the largest Chrysler/Jeep platform on the continent. I actually represent the Ford EcoBoost engine in the Cleveland area. So we have Ford heavily invested there as well as at its Avon Lake facility in the Ohio assembly plant there and General Motors, the most important and only power transmission manufacturing facility for GM. So for Ford, GM, and Chrysler, as well as other stamping plants across the area and tooling plants.

One of the challenges we have both in speaking with Ford—and I can't speak for them—or Chrysler/Jeep gets to this energy question, and we are always faced with outsourcing of our jobs.

And to the extent that the Department can provide a manner of working with these individual facilities to help them conserve energy or reuse waste, heat, find ways to make their product more efficiently, believe me, it would have a major impact on job retention in our region.

So I would hope there would be a way for us to engage with those companies at those given sites and to have that conversation. I don't know that they would necessarily do it directly, but I would just mention that as a possibility for the region that I represent.

Secretary MONIZ. One example in your region—and you were there—is the ArcelorMittal steel plant. Extremely efficient. We were able to put some Recovery Act funds in there, and now it is a great going concern and supplying mainly auto companies, in fact.

Ms. KAPTUR. Yes. It is really remarkable to see what can happen.

Mr. Secretary, my second question here. And I know others have questions. But I wanted to go to the Ukraine-Russia situation right now and ask about what you—what your thinking is on Europe and our ability, as a country, to backfill Europe with energy supplies to help to lessen their dependence on Russia.

Could you share any thoughts that you have on that from the administration's standpoint. What do you think could be an effective strategy in the short term? In the long term?

I represent the ports along the Great Lakes, the shortest distance to northern Europe, shortest shipping distance to Bremerhaven, to Gdansk. I am wondering if you have any thoughts on that that you could share.

Secretary MONIZ. Certainly. So maybe two different kind of answers. One is, if there is an interest in the Ukraine situation specifically, I would just add briefly that, since last August, we have been engaged with Ukraine in providing assistance—not financial assistance—planning assistance.

So, for example, DOE, our emergency response team led a team that included Red Cross and FEMA, some Canadians, to help the Ukraine Government formulate an energy contingency plan for the

winter. And I think it certainly helped. It wasn't fully implemented.

And as, frankly, anticipated, coal became the biggest problem for the winter right now. And I would just say that the Ukraine Government is seeking our continued technical assistance for planning going forward.

With regard to the broader question, the——

Ms. KAPTUR. Mr. Secretary, could you clarify on the coal issue. Could you just add two more sentences. It became a problem. They didn't have sufficient through-put because of the Russians moving into the coal?

Secretary MONIZ. Correct. The Ukraine electricity sector is roughly half nuclear and half coal, and the coal sourcing was principally from eastern Ukraine, the place where the separatists were in control, and some coal shipments were also blocked from Russia.

Ms. KAPTUR. I just want to mention I represent the largest coal shipping port on the Great Lakes, the Port of Toledo.

Secretary MONIZ. Yeah. So, then, with regard to the broader issue, particularly through the G7 energy ministers, we met first in Rome last May with the European Union, so G7 plus European Union. I would love to come back and talk with any of you, if you like, about this.

We formulated what we would call a modern set of principles about energy security, and it starts with the statement that energy security is not one nation's issue. It is a collective issue of, let's say, the United States and our allies and friends. You have to think of ourselves as a system of energy security.

So, in that regard, clearly things like, when we start to be an LNG exporter probably in about a year, that will be very helpful to put more LNG, obviously, out into the global market. That is an example of what we could do. I believe some coal was shipped from the United States to Ukraine as well. I am not quite sure. I know that boats were loaded at least at one point.

But the European Commission, with whom we are working very, very closely—in fact, just yesterday they issued an interesting document—they are very much in line with our energy security principles that we established last year, and the key is establishing diversity of supply, diversity of supply routes.

So, for example, for gas, the southern corridor, to bring Caspian gas to Europe is an important new development, but it is also important to create the infrastructure within Europe to be able to move energy across international borders. Their infrastructure is, by their own acknowledgement, not fully developed for that and, consequently, they don't have the full market structure they need to respond to energy shortfalls.

Again, I would be happy to discuss that. I would be happy to brief any members of the committee on that energy security initiative.

Ms. KAPTUR. Thank you, Mr. Secretary.

Mr. SIMPSON. Thank you.

Mr. Fleischmann.

Mr. FLEISCHMANN. Thank you, Mr. Chairman.

And, Mr. Secretary, I want to personally thank you for your very kind words today and throughout your tenure about the great city of Oak Ridge.

I am privileged to represent that city. And as you and I are well aware, we do so many things in Oak Ridge, premier national lab, Y–12, UPF someday, and our great nuclear cleanup legacy mission. And I want to thank you for your cooperation and attentiveness to all of our issues, sir.

Secretary MONIZ. Thank you for your cooperation.

Mr. FLEISCHMANN. Yes, sir.

I have a few questions. Mr. Secretary, I am pleased to see that you have included $100 million in the President's budget request to keep our domestic uranium enrichment capability moving forward.

Last year this committee directed the Department to produce a report by April the 30th that includes an accounting of available low-enriched uranium, high-enriched uranium and tritium for our national defense purposes as well as a cost-benefit analysis of each of the options to supply enriched uranium in the future.

Two-part question. Could you please give us an update on the report. And will it would be delivered to the committee on time, sir?

Secretary MONIZ. Well, we certainly hope to get it on time. We are well along in the interagency process. Because, as you know, it is an interagency process.

And the interagency recently asked us to have an independent cost analysis done; so, that is underway. And that is the piece now that we need to get back from the contractor, basically, that we have hired to then finalize the report.

So we are aiming to meet the date. I hope we can. The independent analysis is the issue right now to complete.

Mr. FLEISCHMANN. Thank you, sir.

The condition of the Alpha 5 facility at Y–12 has been described by the NNSA as the worst of the worst. DOE's Inspector General recently briefed me and said that, due to delays in the cleanup and disposition of contaminated excess facilities, the Department is taking on ever-increasing levels of risk.

As a matter of fact, I saw a video of that facility, and it was shocking. These contaminated facilities pose significant health and safety risks to employees and to the public, and as they continue to deteriorate, the likelihood of a serious accident increases.

What is the Department's plan for dealing with this critical problem?

Secretary MONIZ. Dr. Fleischmann, you are certainly correct. I am not sure whether that particular building wins the prize or not. There are many competitors with its extremely old infrastructure, buildings that were, you know, from the early 1950s and nuclear facilities of that age. So we are concerned and we are moving forward.

What we are trying to do is—I will give you an example of UPF—you mentioned UPF; so, that is a good example. Clearly we have, again, as you well know, some highly challenging processes in the current situation, safety issues. You know we had things falling, which you don't want to do in an HEU facility.

As we have now looked to re-architect the UPF plan, within that plan is a fast-tracking of getting the risky operations out by the end of this decade. Even if the full project is not finished, our target is 2025. So we are trying to really, really move that up.

Another thing that we are doing is—in this budget for fiscal year 2016, you kind of don't see it so evidently. But we had a new principle. The principle was that the programs could not have a proposal that would continue to increase deferred maintenance. So, at a minimum, they had to stop that and then eventually dig ourselves out of the hole.

Now, as we then do another project, the Lab Operations Board was charged to do an inventory, the first systematic inventory of general infrastructure needs across the complex. We have over $100 million in the budget request to start addressing those needs, but they are coupled because some of those general infrastructure needs, like in NNSA, are designed to take a big hit out of continued maintenance budgets.

So it is safety and budget together that we are trying to address, but it is—you know, it is the old theory of holes. You find yourself in one, stop digging. And that is at least the philosophy that we are trying to put forward. All right.

Mr. FLEISCHMANN. Thank you, sir.

Secretary MONIZ. Yeah.

Mr. FLEISCHMANN. Mr. Secretary, I was very pleased to see the budget request for Advanced Scientific Computing Research program, and specifically Exascale computing, but I hope we can address the proposed reduction in funding for the leadership computing facilities.

Can you speak to this reduction in the context of the value of leadership computing programs, sir.

Secretary MONIZ. Well, the leadership computing programs and NERSC, the Oak Ridge, Argonne, and Berkeley computers, are extremely heavily used. They are critical not just for our labs, but for users all across the country.

A, we think the budget will allow full operation of those facilities. But in addition to the Exascale, a few months ago we announced the CORAL initiative. And the CORAL initiative will effectively be the next generation of those leadership computing facilities.

And, again, as you well know, Oak Ridge is one of the sites. In fact, I think it will be the first site operating with the next-generation CORAL computer, and that will be, well, perhaps as much as 150 petaflops, so well on the way to Exascale.

Mr. FLEISCHMANN. Thank you.

One last question. Mr. Secretary, as you know, this committee has been very supportive of the work being done by the Advanced Manufacturing Office. I have been told by several DOE officials that Oak Ridge National Lab's manufacturing demonstration facility is leading the way in advanced manufacturing, as evidenced by the recently announced manufacturing hub, led by my alma mater, the University of Tennessee at Knoxville.

Mr. Secretary, the fiscal 2016 budget request for AMO includes a healthy increase. Can you please point out briefly some of the innovations that these facilities have had with U.S. industry.

Secretary MONIZ. Well, first of all, I would like to note that the large increase is there because what we put forward was—instead of kind of putting forward the annual request for the two new ones, we actually proposed the whole 5-year request. So that is $140 million for the two of them. But that would be then full 5-year funding for those facilities. Kind of upfront funding is always nice. But then how do you make it fit into the bucket?

Well, so far, we have, like, two and a half, in a sense. The first one is in Youngstown, Ohio, with DOD as the lead investor getting started with the additive manufacturing approach. And earlier I mentioned as one example this issue of printing your car in 12 hours as just one example of what you might do with that kind of technology.

Again, the idea here is these are technologies that—these are manufacturing directions that will have multiple-sector impact, certainly in the energy sector, but even beyond. Additive manufacturing is just a place in the future.

I might add, by the way—and, again, you know this from the Tennessee example on composite materials—that we also insist—this goes back to an earlier question—we also insist that there are training components to this.

And one good example right now is the additive manufacturing project we have at Oak Ridge with its partnership with Pellissippi Community College in terms of training, certifying 3D printers of the future. That is people, not the printer, not the machine.

The second one was on wide-bandgap semiconductors, and that is for power electronics. And that will have multiple applications, everything from vehicles to solar, just kind of across the board.

So that is the spirit. These are directions that will not be narrowly applied, but will establish a manufacturing—help the manufacturing base in a broad sense.

Mr. FLEISCHMANN. Thank you, Mr. Secretary. Appreciate your answers to those questions.

Mr. Chairman, I yield back.

Mr. SIMPSON. Thank you.

Mr. Honda.

Mr. HONDA. Thank you, Mr. Chairman.

And welcome, Mr. Secretary. It is always instructive to listen to the dialogue here. I have three quick questions, and one is the SunShot Initiative.

Mr. Secretary, 2016 marks the halfway point of the President's SunShot Initiative to make solar power cost-competitive without subsidies after 2020.

Can you quickly give an update to the subcommittee of where we stand in achieving that goal.

And as I understand it, we are currently about 70 percent of the way towards achieving that goal of reducing costs of solar energy technologies. It is the halfway mark and we are more than halfway there, yet——

Secretary MONIZ. Right.

Mr. HONDA [continuing]. The request increases the solar energy budget by almost 50 percent.

And so why is the increase so large in light of these achievements that we have right now? And how is the funding being distributed between activities?

One activity I am thinking about being particularly important is helping reduce the costs to manufacture photoable takes on a large scale in order to compete with other lower cost countries.

Secretary MONIZ. Thank you, Congressman Honda.

You are right. We are ahead of schedule, and that is great. The costs have come down dramatically. And the SunShot program has many, many components to it. Clearly, one has been to work with companies and researchers in terms of solar modules.

And, again, with Ranking Member Kaptur, we were at one plant for solar last Friday that we have worked with—actually, our lab has worked with over many, many years, going back to the late 1990s, in terms of developing some of their underlying thin-film technology. They are one example of what has been a cost reduction.

Frankly, modules are now substantially below a dollar per watt. The Holy Grail is $0.50. I think we are going to make $0.50 before the end of this decade. So we help in those areas.

But now, frankly, a big part that we need to ramp up more on is on the balance of plant costs. That has not come down as fast as the solar modular costs, and we need to get that down to $0.50 a watt, also.

So there is still—you know, there is still work to do, but the dramatic reduction has got—I would say solar today is, in certain applications at least, already competitive. So it is across the board.

And it also includes proposing partnerships with, for example, cities in terms of how one can streamline things like the licensing. And, as you know, that has a lot of unevenness. Different States and different cities have different standards, different codes. How do you streamline that? If that is dragged out for a long time, a project can go down easily.

So we are working across the board, and we think this is such a major direction for the future that we would like to increase our investment.

Mr. HONDA. Great.

And it seems like that, with that, it will decrease the time and, also, provide a good timeline to take advantage of it.

Secretary MONIZ. Yeah.

Mr. HONDA. The Exascale was mentioned just previously, the Exascale computing. The budget request proposes $208 million for the Exascale Initiative within the Office of Science, and that is more than double the amount the committee provided last year.

Developing Exascale computing represents the next technological leap in high-performance computing, but there are many unanswered questions relating to Exascale computing and how the U.S. is going to get there.

So what are the kinds of things we are not able to do without this Exascale computing? And how critical is that capability? And then what is the current timeline for developing an Exascale system in the United States? And do you believe that the Department will achieve that target? And where does the United States currently stand in relation to international development of Exascale

systems? And then I will have a couple of comments after your answer to this one.

Secretary MONIZ. Okay. Well, again, in the big—the big context is high-performance computing is very important for our mission. And while we are typically at the cutting edge of it, let's say, for our nuclear weapons program, for example, industry is more and more using these tools as well.

So the CORAL—as I mentioned earlier, we expect to get into the 100 to 150 petaflop region within a few years. We expect to reach exascale, then the next factor of 7 or so 2022, 2023, probably.

There are many challenges. You correctly stated the Office of Science budget for exascale, but I do want to note there is an additional budget in NNSA which is correlated in terms of working together.

Mr. HONDA. Yeah.

Secretary MONIZ. So it is actually $273 million total.

There are major challenges to address. One of them, for example, is energy utilization. If we just went up with current technologies, we would be talking, you know, tens of megawatts of energy requirement for one computer, and that is not going to work.

So energy management is one example of the kinds of challenges. Another one is going to be just managing the huge data. This is really big data when you start going there. So managing data is a big part of it.

The applications, what we have seen is that, at every scale that we have taken, the new capabilities rapidly get utilized. I will give you two very different examples where it is—I will give you three examples.

Okay. One is nuclear weapons. If we are going to keep our nuclear weapons as they get older and older and older, reworked, of course, life extension, but older and older and older from testing, we are going to just have to keep increasing our understanding of what is happening with these aging systems. And computation is a critical, critical part of that.

Mr. HONDA. And, Mr. Secretary, the computation takes the place of testing physically nuclear power.

Secretary MONIZ. It is a central part of it, but other experimental facilities are important as well, like NIF at Livermore, for example, and others in other places. But the computation is absolutely central.

Another example would be in climate science in being able to get to a much finer resolution. Macro, you know, we have pretty good tools, but as you go to finer and finer regional impacts, we are going to need more computational power.

And a third example is materials by design. To really start to be able to design materials *ab initio* for all kinds of different applications will profit from increased computational power.

Mr. HONDA. So one of the characteristics of the supercomputers would require right now a huge amount of power, but to replace that drawdown on resources as the photonic interconnections, that could possibly drastically reduce power consumption, heat loss, and increasing the speed of computation. So——

Secretary MONIZ. Yes.

Mr. HONDA. The reason I was asking the question is because its application to many things that we care about—nuclear power, staying on top of other countries, and using the supercomputer, and the speed with which we will be able to do this——

Secretary MONIZ. Yep.

Mr. HONDA [continuing]. And then taking the place of actually doing nuclear tests—and all of these things will save us both, I think, time, money, and resources and, also——

Secretary MONIZ. Yes.

Mr. HONDA [continuing]. Possibly give us a sense of security in our national security.

Secretary MONIZ. And, also, in the manufacturing sector. As you know already, airplanes, for example, are essentially designed on a computer, et cetera.

Mr. HONDA. Yeah.

So I will make a comment about that after this last question, Mr. Chairman, if I may.

The fiscal year 2016 budget request provides strong support for the Advanced Research Projects Agency—Energy, ARPA–E. Although it is a young agency, ARPA–E has seen considerable broad bipartisan support largely for its active project management, its flexible funding structure. One of the challenges of ARPA–E is that it must show results while also taking many risks.

What is your view of the proper balance for ARPA–E?

Secretary MONIZ. I am on the risk side, and——

Mr. HONDA. I am, too.

Secretary MONIZ. Yeah.

And I think the program is outstanding. As I said earlier, now that we are at the 5-year mark, you know, it is at the place where we can now judge what are the outcomes in the portfolio, and I think the outcomes are just outstanding.

I might add, if I may advertise, since the chairman noted how our budget request was—I think you said very modest—earlier this week, the American Energy Innovation Council, Bill Gates and other major CEOs in our country, came out with an update of the report they made some years ago and among their recommendations was going back to the original thought of ARPA–E as a billion-dollar-a-year agency. So, in that context, our request is obviously very modest.

Mr. HONDA. If I may, Mr. Chairman, the last thing I would like to try to do is—all this research and all this application of the sciences will also give us the ability to be more efficient, precise, and increases our ability to assure our country the security that we want in the different arenas that we are talking about here.

Secretary MONIZ. Uh-huh.

Mr. HONDA. Given that efficiency and the power that it brings with it, it seems to me that there is an increase in the wealth that is created by that. Is that correct?

Secretary MONIZ. Oh, yes. Well, the classic economic analyses, including by my former colleague, Nobel Prize winner Solow, is that roughly half of the productivity gains in the American economy have come from innovation.

Mr. HONDA. Given that, is there a way that we can compute the kind of return on the investments that we are making right now

in the area of energy and efficiency and then look at the delta, the dollar amount that is being created, and invest that into areas like Kentucky and West Virginia, where we have thousands of folks being laid off from work because of the change in technology?

It seems like there should be an investment in the folks who have provided energy in the past and then reinvesting in them in terms of retooling——

Secretary MONIZ. Yes.

Mr. HONDA [continuing]. Their skills and, also, providing infusion of that investment in those folks because of the investments that we have made in sustainable energy.

Secretary MONIZ. Again, the fiscal year 2016 budget proposal does include—I am not suggesting the scale was what one may need.

But, for example, the so-called POWER Plus program includes specifically some funding to try to help communities in transition, in particular, communities that have been dependent on coal in transition.

Mr. HONDA. Right.

And then there is a dual aspect, like weatherization. You know, we provide funding for weatherization to help seniors and others to reduce their costs in fuel——

Secretary MONIZ. Right.

Mr. HONDA [continuing]. But we don't talk about applying solar to their buildings or thin photoable take, thin film, where we can apply these things to the areas that could use them.

So it seems to me that, in terms of highly—what is the program? The weatherization program?—that we should attach solar to that so that those folks can create their own energy, at the same time reduce their costs through weatherization. So there is a double hit.

And I think that these are the kinds of investments we could make from the wealth that we create from the investments that——

Secretary MONIZ. Interesting.

Mr. HONDA [continuing]. We do as a Nation and then not have any other part of this country be left behind or any sector of the population.

So I am hoping that the chair would look at that and sort of—maybe we can look at a possible strategy where we can make some of these reinvestments in the areas that are needy.

Thank you, Mr. Chairman.

Mr. SIMPSON. Thank you.

Mr. HONDA. Thank you, Mr. Secretary.

Mr. SIMPSON. Mr. Valadao.

Mr. VALADAO. Thank you, Mr. Chairman.

Mr. Secretary, appreciate you taking some time for us today.

Last week I had the opportunity to go tour Berkeley National Laboratory up there and spent some time looking at the advanced light source. I share a lot of the same concerns of how important this is, but it really was an impressive deal, I mean, to go and spend some time and see how much research is going on from computer trips all the way to the drought-tolerant crops that in my area are so important.

With what is going on there, as other nations and regions around the world accelerate their development of new and more powerful light sources, what are we doing to stay on the cutting edge? Are we——

Secretary MONIZ. Great.

First of all, I would like to say to any members of the committee, if we can facilitate visits to our laboratories, Berkeley and others, we would be glad to do that, because I think it is—well, we think ultimately it helps us and it is very eye-opening, I think.

In terms of light sources, we have four light sources: Brookhaven; Argonne; Berkeley; and SLAC, Stanford. And we are in some sense over the years kind of systematically upgrading to the next generation.

So the one that we just finished was the Brookhaven one. The next one now is SLAC. In this budget, there is a big push for SLAC.

And I should say these light sources—I want to make it very clear—they all have different characteristics. So it is not like it is just one light source, you know, made four times. They all support different areas of science because of their particular beam characteristics.

And, by the way, you may have heard, one of the things not well known is that, if you look at those four light sources now, 40 percent of their use is in the life and medical sciences. So, again, our job is to supply this tool for the American research community, and then they come in and they compete for this. And I will add, for example, with this—sorry. I am getting away from your question, maybe.

But if you look at—because of this use now, like NIH, you know, they pay to build beam lines at these light sources so that their researchers have access for what they are doing. So we supply the core tool, we build it, we operate it, and then scientists come in and other agencies even support NSF and NIH especially, some of the equipment.

So, anyway, the answer is, A, we are pushing on the frontier; B, the budget in fiscal year 2016 we estimate to be essentially a full operating budget—we say 98 percent operating budget—for all of our major facilities across the country.

Mr. VALADAO. Okay. And I wanted to follow up on—not follow up, but just add my concern, obviously, on the pipeline security and the grid security.

There were some comments made in an Energy and Commerce hearing not too long ago when these questions have come up, and I know it has been brought up again.

In my region, especially now with the drought, we do rely on a lot of electricity for pumping water, and the grid obviously has a huge impact on keeping fruits and vegetables cool for storage. There is a food supply component to this whole debate.

So it is not just providing electricity for people's washers and dryers, but actually our food supplies and the way we process. So it is something that is very concerning to me, and it does have a huge impact. And so I would like to reiterate how important that is to me.

And then there is another issue that was brought up. In your testimony this week, you have mentioned a new Cross-Cutting Initiative, the energy-water nexus, and that one caught my eye. Representing a district currently experiencing its fifth year of drought, I was hoping that you could elaborate on this initiative.

When you say that you want to save water and energy production, what specifically are you saying? And what are you targeting?

Secretary MONIZ. So one thing I would recommend to you and/or your staff, a report that we published last summer on the Energy-Water Nexus. I think it is about, like, a 150-page paper about all these issues of intersection of energy and water concerns.

I do want to emphasize that, obviously, the energy-water and water, in particular, is a subject for other departments—Interior and others, EPA, clearly—but there are some very strong intersections. Two of the areas, for example—and I think the budget proposal is for $38 million, I believe, for energy and water, cross-cutting. Two of the areas, for example, would be what we call uses of non-traditional water, water that is not pure. It can be including flow-back water from fracking operations, how do you use it, how do you recycle it, to have less demand.

Another area which may be more directly relevant to your part of the country is kind of low energy requirements for water conveyance, et cetera, because you spend a lot of energy moving water around, pumping and conveying water. So those are examples.

But with warming, with droughts, with wildfires, we are seeing a lot of impacts of extreme weather, and a lot of those extreme weather impacts affect the water resources.

Mr. VALADAO. Well, thank you, Mr. Chairman. I yield back.

Mr. SIMPSON. Mr. Fortenberry.

Mr. FORTENBERRY. Thank you, Mr. Chairman.

Good morning, Mr. Secretary.

Secretary MONIZ. Good morning.

Mr. FORTENBERRY. Pleasure to see you.

I want to talk about three categories of issues: nonproliferation, MOX and ITER.

Regarding nonproliferation, all of us clearly share the same goal of reducing the probability of a nuclear weapons explosion to as close to zero as possible. And in that regard, the framework for doing that, at least my framework, is a robust nuclear deterrence, a robust nuclear security, as well as robust nonproliferation programs.

In your Energy Advisory Board's interim report on nonproliferation last summer, it suggested that the NNSA needed to establish a compelling vision for nuclear security with clear priorities. And in light of Russia's decision to substantively suspend or eliminate nuclear materials cooperation, that is particularly one area of particular concern.

In addition, I am reading in your budget request that you have reorganized the defense nuclear nonproliferation programs along four categorical lines. I would like you to explain that division.

But the heart of the question—and you know the heart of my question already—is the architecture of our nonproliferation approach sound enough? Do we need to rethink the framework?

I would suggest to you that all of us here would be eager to cooperate in that type of analytical thinking or even academic thinking as to whether or not the architecture is as sound as it could be to meet that goal of reducing the possibility of nonproliferation and nuclear weapons explosion. Let's do that, and then we will go to MOX and ITER.

Secretary MONIZ. Okay. First of all, I really want to again thank you and appreciate your incredibly strong interest in the nonproliferation agenda. I look forward to more discussions.

You referred to the interim SEAB report. And let me—I am going to talk about another report that we are doing in response to it, which may provide, actually, the foundation for us to get together again and have a broader discussion.

Every year we are required to do an annual report on the stockpile—the science-based Stockpile Management Plan. We have decided, frankly, inspired by the Al Carnesale-led interim report, that we are going to produce a similar nonproliferation volume. And we are targeting that for the middle of March. Maybe it will be the second half of March, but, anyway, in March.

So we are well along. And this will kind of pull together our programs, but also where we think we need to go. And so that kind of strategic vision is something that I am delighted to discuss with you and your colleagues who have——

Mr. FORTENBERRY. You are talking about in a month?

Secretary MONIZ. In one month.

Mr. FORTENBERRY. You are talking about this month?

Secretary MONIZ. This month.

Mr. FORTENBERRY. Excellent.

Secretary MONIZ. Yeah. Yeah. Yeah. In weeks. In weeks.

Mr. FORTENBERRY. Well, Mr. Chairman, if you could indulge me, if we could plan on using more time to delve into the specifics of that when it comes out, I would certainly be willing to commit to that.

Secretary MONIZ. We would be happy to come up and have a—start with a briefing of interested members and then have a dialogue. That would be great.

Mr. FORTENBERRY. Thank you.

Secretary MONIZ. By the way, a second outcome of that report is we decided—because that report called for establishing kind of a policy function that went across the board and it kind of recommended setting up a new office reporting to the Secretary on it. I didn't want to establish a new office, but what we did establish—and we had the very first meeting just days ago—is what we are calling the Nuclear Policy Council. So it is a council that will meet quarterly to discuss issues typically cut across the civilian and military sides of nuclear, so nuclear fuel cycle issues, et cetera.

Mr. FORTENBERRY. You originated this council——

Secretary MONIZ. Right.

Mr. FORTENBERRY [continuing]. Or was that—you originated it——

Secretary MONIZ. Correct. Yes.

Mr. FORTENBERRY [continuing]. Within your Department?

But it will be multi-disciplinary, across agencies?

Secretary MONIZ. Correct. And we just had the first meeting this week. It will be quarterly meeting and maybe with some——

Mr. FORTENBERRY. Sometimes it is a little difficult to keep all of our various councils straight.

Secretary MONIZ. We have a lot of councils. I have created a lot of councils. But, frankly, it is because I think there has not been enough discussion across the stovepipes, because so many of these issues connect.

I mean, you know, nuclear fuel cycle issues are in the Nuclear Energy Office under the Under Secretary for Energy and Science, but, boy, does that raise proliferation issues.

Mr. FORTENBERRY. Right.

Secretary MONIZ. Right? So I have been trying to get a lot of these—cybersecurity is the same thing, where we get these councils and they lead to taskings for specific jobs. But rather than creating, you know, kind of a permanent organizational structure, I would rather just go this way.

Mr. FORTENBERRY. Well, clearly, we are talking about this in terms——

Secretary MONIZ. Because if they don't work, I can get rid of them easily.

Mr. FORTENBERRY. Sure. I understand. And you probably don't want us to put that in legislation either. You can't get rid of it.

But the framework—well, what we are talking about now is obviously appropriations. So clearly a lot of us have a deep interest in this question, and you do as well. And it is so essential.

I assume the appropriations that are vital to this task are already embedded in your proposed budgets or you have the flexibility to shift money. Or do we need to help adjust something here?

Secretary MONIZ. Well, we obviously made a proposal that we think responds to what we need. That proposal was made, of course, you know, in the interagency process last year.

So as this report comes out and we have a briefing, you know, we would be delighted to work with you in terms of—it might lead to some reshaping. But right now we put together the proposal that we thought, you know, would meet the needs.

You mentioned Russia, just to make it explicit, we did not have any request in there for, you know, nuclear security programs with Russia. They have pretty much been shut off. If there were something to come up, there is a little bit of carryover funds we could use.

But, fundamentally, other than collaborating with them in terms of the repatriation of Russian-origin weapons-usable materials from third-party countries, as we did this year with Hungary and Poland, et cetera, we don't see any collaboration.

Mr. FORTENBERRY. Well, that is a huge and sad development——

Secretary MONIZ. Yes.

Mr. FORTENBERRY [continuing]. And, if we can keep some kind of lifeline open there in consideration of the extraordinarily difficult situation, I think that would be prudent.

But let's move to MOX right quick, if we could. You have got $350 million requested or so. We have got a report that is not yet available that we have requested that is asking you for alternatives. So——

Secretary MONIZ. It is coming.

Mr. FORTENBERRY. Okay.

Secretary MONIZ. Yeah.

Mr. FORTENBERRY. You are familiar with the expression "Go big or go home." And here we are not doing either, it seems to me, not a full-scale commitment, which might be a good thing, a treading water type of commitment that may not even get us to the proper ends of this program, should it prove viable.

So we are building this McMansion with half a roof on it, and that is where we are. And I think we have got to come to some resolution—and, again, this is 20-year-old architecture we are talking about as well, past agreements, an old framework that we are carrying on in time, lots of money being poured this way. Huge other opportunities to do innovative things with limited funds, and, yet, we keep just sort of tacking up siding here. It is a problem.

Secretary MONIZ. Well, first of all, I think you have summarized the situation very nicely. And the chairman and the ranking member and I discussed this.

Look, to be straightforward, we know the last couple of years' administration requests have not met with the pleasure of the Congress and they have been—and the requests have been increased and we have been told to keep constructing at this level—well, $345 million this year, for example—and we are doing so.

We have also been pretty clear in stating that we think a viable project to go to conclusion for the MOX fabrication facility probably needs another $200 million a year to convert.

So I am hoping that this year we can do exactly what you said, come to an agreement about—you know, there is a fork in the road——

Mr. FORTENBERRY. Yeah.

Secretary MONIZ [continuing]. And we can't just keep taking it.

Mr. FORTENBERRY. Well, there are alternative ways, maybe, to think about this in terms of multilateral participation as we rethink again the model of securing nuclear material and keeping it out of—or putting it under a new type of nonproliferation effort.

I think my time has expired.

ITER is——

Secretary MONIZ. Creative ideas we would love to have, but we——

Mr. FORTENBERRY. Well, let's pull the French and the British and the Japanese and Europeans in and let's put this—let's pull them in and make them pay some——

Secretary MONIZ. We need to dispose of this 34 tons of weapons plutonium one way or another.

Mr. FORTENBERRY. ITER, we are pouring a lot of money there as well.

What is the projected outcome?

Secretary MONIZ. I am recused from the fusion program. We would have to get back to you for the record or have our Deputy Secretary come and meet with you. I apologize. But I am recused from that program.

Mr. FORTENBERRY. Do you want to tell me why or——

Secretary MONIZ. The reason for the recusal is quite simple. It is because MIT has a major facility——

Mr. FORTENBERRY. I see.

Secretary MONIZ [continuing]. And so for at least 2 years I am recused from dealing with that budget.

Mr. FORTENBERRY. I have never had the opportunity to say I am recused from a hard decision up here. I am not blaming you, but I am just——

Thank you, Mr. Chairman.

Mr. SIMPSON. I have wanted to be recused a couple of times.

Secretary MONIZ. So our Deputy Secretary——

Mr. FORTENBERRY. I understand.

Secretary MONIZ [continuing]. And our Under Secretary handle that.

Mr. FORTENBERRY. I understand.

Mr. SIMPSON. Congresswoman Herrera Beutler.

Ms. HERRERA BEUTLER. Mr. Chairman, I will recuse you if you need some help with the, you know, gavel there.

Mr. SIMPSON. Yeah.

Ms. HERRERA BEUTLER. Thank you.

And I actually have some questions about cleanup as well, but I am going to start with one issue.

Over the last several years, I feel like the Northwest Delegation has written quarterly letters to your predecessors about the Bonneville Power Administration and the need for BPA to remain under regional control.

And I know BPA has had its own challenges in recent years, but it has provided inexpensive or low-cost renewable, reliable energy to the entire Northwest.

And it is not often that Republicans and Democrats, House members and Senate members, all get together and agree, and this is one of those issues on which we agree, regional control.

And I just wanted to hear if your Department had any plans for change with regard to that coming up that I should be aware of.

Secretary MONIZ. No, we don't. I might choose the words slightly differently because I do still have responsibilities there for the PMAs. But we do not intend to have any policy change with regard to local decision-making other than when there are problems.

And, as you know, there was a big problem the last year and a half. And, frankly, I want to give a callout to our headquarter's Human Resources people, who I think did a fabulous job.

You know, as you know, we frankly had to take over the Human Resources function to correct a very, very serious problem. Gladly, that authority has been returned with, I think, a much stronger organization at Bonneville. So, you know, within those bounds——

Ms. HERRERA BEUTLER. Right.

Secretary MONIZ [continuing]. Because I do have responsibilities still——

Ms. HERRERA BEUTLER. Right.

Secretary MONIZ [continuing]. That is our approach.

Ms. HERRERA BEUTLER. Absolutely. Thank you.

Switching gears, I think it was yesterday or this week—it was soon—you were in front of the Science Committee and——

Secretary MONIZ. Yesterday.

Ms. HERRERA BEUTLER. Yesterday. All right.

And you were talking about the budget and Hanford. What I understand from your testimony was that you were explaining that there is a $100 million increase in the Hanford budget. And I see that differently.

There are two separate sites collectively known as Hanford, the Richland Operations Office and the Office of River Protection. Richland is down $100 million. Office of River Protection is up.

Secretary MONIZ. That is right.

Ms. HERRERA BEUTLER. But it is imperative that they are viewed as two separate sites, and that is how they are under the law. The community and the law don't consider that a plus-up in the budget. They consider it a cut, as do I. And, you know, it is current law that they be viewed that way.

My district, so that you know, is just—it is adjacent and downriver of Hanford along the Columbia River, and the entire southern border is the river. And so, as you can imagine, I have a keen interest in making sure that the safe, efficient, effective cleanup moves forward. And so, as you can understand, I view this as a cut and I am concerned about it.

I wanted to see if you could explain whether or not—based on the budget, if you think there are going to be any milestones in the 300 area that might be missed or jeopardized or at risk based on this budget request. And can you explain your plan for completing the river corridor work—or the work within river corridor at the 324 building and the 618–10 burial ground.

Secretary MONIZ. Well, in broad terms, again, we—first of all, obviously, I certainly agree with the facts. The Richland budget is down 100.

The W2TP basically is up 200. And we do have to get that plant going to start—we hope to start vitrifying at least low-activity waste early in the next decade.

With regard to Richland, however, we feel that it actually is a strong budget. There have been projects completed or just about to complete, including what was, until recently, viewed as the highest risk project. The plutonium finishing plant is getting down to slab.

And with regard to the river corridor, as you know, there has been tremendous progress and, in fact, reopening much of that corridor now to society to utilize. So we are not walking away from—we are going to keep, by the way, I mean, full—you know, pumping chromium in the plateau, et cetera, et cetera.

So the Richland budget, I think, you know, it is going to have a strong program, and we will continue to make progress. There is still——

Ms. HERRERA BEUTLER. You don't see any risks to lowering that budget? It is not going to cause you to not be able to complete some of the work?

Secretary MONIZ. Look, I will be honest. You know, our environmental management budget—we have got plenty of other needs that we would be happy to meet, but the budget constraints are what they are.

And, obviously, Hanford, Idaho, Savannah River, other areas in Oak Ridge, some in Los Alamos—I mean, we still have a lot of big problems to address, and we are trying to do the best optimization we can within a rational budget envelope.

Ms. HERRERA BEUTLER. Well, I know Congress increased that pot for the fiscal year 2015. And our goal was to send you the message that this is a priority for us. This is not the community's problem. It is our problem, it is your problem, it is the feds' problem.

And, to that end, you mentioned a waste treatment plant that is being constructed with the hope of vitrifying this high-level waste. And I wanted to—another comment that I had, in reviewing your testimony yesterday for the Science Committee, was the term you used for Yucca Mountain was "unworkable." You said it was an unworkable solution for the high-level defense waste. And I wanted to ask——

Secretary MONIZ. I may have to, if you don't mind——

Ms. HERRERA BEUTLER. Oh. That word wasn't used. I am sorry.

Secretary MONIZ [continuing]. Clarify that. No. That was not about high-level waste or spent fuel separately.

What we said is that Yucca Mountain, we think, is unworkable because, frankly, the lack of a consent-based process has just led to a never-ending saga. And we believe—this is the Blue Ribbon Commission's overarching conclusion, is that any nuclear facility is going to require a consent-based process. We think——

Ms. HERRERA BEUTLER. Okay.

Secretary MONIZ [continuing]. That is the only way to go.

Ms. HERRERA BEUTLER. And you are leading into where I was going.

So I had wanted to know if there was a scientific reason. What you are sharing is obviously a very real thing. It is kind of a socio-political barrier or challenge. Is there a scientific reason that it would be unworkable?

Secretary MONIZ. Well, the NRC recently—in its safety report, the NRC said that it passed its scientific test, to which it added: However, there is no point in going forward with it, because we don't even have the water and land access that we need. And that goes back, again, to the lack of a consent-based process.

Ms. HERRERA BEUTLER. And your role in helping determine that consent-based process, how do you see that?

Secretary MONIZ. Well, in the budget, we have a $30 million proposal for moving towards waste management solutions that will include working with communities. By the law, we cannot select another site for anything, for a repository, for storage facility, you name it, but we can move to set up a consent-based process, see what communities are interested.

You may have seen that, just—I think it was the beginning of last week, a community with clear support in the State of Texas came forward for a rather—they are proposing a rather large storage facility for commercial spent fuel, for example.

Ms. HERRERA BEUTLER. Well, this is defense—I am interested—this is defense waste.

Secretary MONIZ. Yeah, on the defense waste side——

Ms. HERRERA BEUTLER. So let me be really specific, and I——

Secretary MONIZ. Okay.

Ms. HERRERA BEUTLER [continuing]. Will give it back to the chairman, because I don't have a ton of time.

We are very interested in making sure that Hanford gets cleaned up——

Secretary MONIZ. Absolutely. We are, too.

Ms. HERRERA BEUTLER [continuing]. And making sure that there is a—as current law is, that we utilize the place that it is designed to go to for permanent disposal. And I guess I just want you to be aware that we are watching it and we want your help and your time.

Secretary MONIZ. If I may, I would note that—I mean, you may want to look at or have your staff look at a report that we published on our Web site in October. And it is—another of the Blue Ribbon Commission recommendations was to do a study looking at the issue of whether we should do defense waste and civilian spent fuel separately rather than together. I think it is a very interesting report. I think it is worth your looking at.

Frankly, the report said that there are many reasons to think that doing it separately could be better. And I will give you an example from Hanford that is in the report.

About a third of the radioactivity at Hanford is in the cesium-strontium capsules, which are very small-diameter capsules. They may be very appropriately disposed of in a deep borehole, a 5-kilometer-deep borehole in crystalline rock, rather than a repository.

And in our fiscal year 2016 budget, not for nuclear waste, but in our fiscal year 2016 budget, we want to go forward with a science approach to looking at deep boreholes.

Ms. HERRERA BEUTLER. Well, and I understand that, if we are talking about commercial waste. But, again——

Secretary MONIZ. No, no, no. That is Hanford waste.

Ms. HERRERA BEUTLER. Well, but what we are most concerned about, our biggest problem, what we are building this plant to vitrify this waste for is to deal with the high-level defense waste. I mean, that is where——

Secretary MONIZ. But—may I? The cesium-strontium capsules are defense high-level waste.

Ms. HERRERA BEUTLER. So then why—okay. We are going to follow up with you on this because we appreciate——

Secretary MONIZ. Okay. Great.

Ms. HERRERA BEUTLER. We appreciate your work.

Secretary MONIZ. We would love to. Right.

Ms. HERRERA BEUTLER. I guess my concern is we are missing the main focus. And, honestly, this has gone on for so long. And I realize there are some actual challenges to what we do. It has not been done; we are trying to do something that we haven't had to do. But it is our responsibility to clean it up. We dropped this on this community, and to walk away or to spend endless decades saying, "We will put it here; well, here is a new report, here is a new commission; let's put it here, let's do it here" is unacceptable.

And, with that, I yield back my time.

Secretary MONIZ. If I may, just one last comment.

Look, we are as eager as you to do this. But right now, for the tank waste, the first thing is we have to get it into glass. And that is going to be still a multidecadal issue. So we are working it.

And, anyway, look, we would be happy to get together and discuss it further.

Mr. SIMPSON. Thank you.

But, in all fairness, in all consideration, "consent-based" is in the eye of the beholder. Talk to the local county commissioners around Yucca Mountain.

Secretary MONIZ. Uh-huh.

Mr. SIMPSON. They support it. That is consent-based. So I think, you know, how you want to define "consent-based" is an important thing.

Secretary MONIZ. We——

Mr. SIMPSON. Secondly, the Blue Ribbon Commission was precluded from looking at Yucca Mountain for anything. So to say that we looked all over and all this kind of stuff and we came up with this plan—and I don't disagree with what you did. And, in fact, I support trying to do a pilot program on interim storage. But you were precluded from looking at Yucca Mountain.

And so, to be fair, let's admit that Yucca Mountain and the decision not to proceed with Yucca Mountain after spending I don't know how many billion dollars we spent there was a political decision made by the administration to elect a certain Senator. That was the decision that was made politically.

Secretary MONIZ. "Consent-based" means consent all along the chain.

Mr. SIMPSON. All along the chain.

Secretary MONIZ. And——

Mr. SIMPSON. Which chain are we talking about?

Secretary MONIZ. The chain from community to county to State to Federal Government. Much easier to stop something than to get it done. I will note——

Mr. SIMPSON. WIPP wasn't consent-based. The attorney general of New Mexico fought it all the way.

Secretary MONIZ. Well, no, until—it took a long time.

Mr. SIMPSON. Until he lost in court.

Secretary MONIZ. It took a long time, but, eventually, I would say it was consent-based.

But I will give you an example of what didn't happen, is the—in terms of storage, there was the Utah storage facility which even got a license from the NRC, and it couldn't get past State objections.

So, anyway, that is——

Mr. SIMPSON. I know.

Secretary MONIZ. That is my story, and I am sticking to it.

Mr. SIMPSON. This is a discussion that will continue, and I am sure it will continue during negotiations on this bill.

Secretary MONIZ. Right.

Mr. SIMPSON. The Secretary has a hard stop at 12 o'clock, as I understand it, so I am going to ask Members that have additional questions to be very quick. Most of them will be submitted. Mine will be submitted for the record.

Mr. SIMPSON. But let me ask quickly, Mr. Secretary, the Waste Isolation Pilot Plant has been shut down over a year now, and the plans for cleaning up transuranic waste at nearly every DOE site have been impacted.

The President's budget request proposes $243 million for WIPP, a cut of $77 million from last year's level. While some of this is due to the completion of recovery activities, the request also proposes

a cut of $33 million in base operation costs and only provides $30 million to pay for what could be more than $300 million in infrastructure upgrades needed before WIPP can be fully operational.

Nevertheless, you have set ambitious targets of resuming interim waste emplacement operations by March 2016 and full operations by 2018.

Do you believe you will meet those target dates that you have set for reopening WIPP? And do you believe that this budget request will fully support those targets? And why doesn't the budget request include sufficient funds for the infrastructure upgrades? And what will be the impact of the proposed cut to the base operations of WIPP?

Secretary MONIZ. Well, I mean, we think the budget is the one that we need for that program, as you described it, getting back into 2016 to begin emplacement operations. The issue is that, this year and going into 2016, we are still going to be in the design phase of the major ventilation upgrade, which is the long pole in the tent for the full restart.

2018, we hope we will be there, but we will need to complete this—to be honest, we still don't know what the capital cost, for example, will be of the ventilation upgrade and the schedule.

So we are aiming—so 2016, we are saying we will meet that. 2018 we think is reasonable but contingent on the results of our design.

And part of our project management change is I don't want to keep throwing out numbers until I know what the damn project is.

Mr. SIMPSON. Yeah.

When will you finalize your review of the root causes of these incidents that happened there? And how will you ensure that those causes of these incidents are fully addressed before restarting waste operation?

Secretary MONIZ. Well, the technical team and the Accident Investigation Board are pretty much, you know, wrapped up. There was a delay while we put in place the infrastructure to be able to visually survey the entire panel in which the bad drum came from. That was done, and so we are getting there.

I think it is pretty clear that the mix of materials, including the improper use of that organic material, is what led to the exothermic reaction. We know exactly which barrels have that. It is not a huge number, but we have to look at those and make sure that they are okay and then get back into emplacement.

Mr. SIMPSON. Okay.

Ms. Kaptur.

Ms. KAPTUR. Thank you, Mr. Chairman.

And thank you, Mr. Secretary, for your endurance.

I want to associate myself with the remarks of Mr. Honda, Congressman Honda, on the SunShot solar effort and maybe just place on the record that when we were at First Solar, the leading solar manufacturer in our country, in Ohio, it was mentioned that the largest utility field is now 7 miles by 7 miles.

Secretary MONIZ. Uh-huh.

Ms. KAPTUR. That is really something to think about.

Secretary MONIZ. That would be a field helped with a DOE loan guarantee, by the way. It is about 550 megawatts PV.

Ms. KAPTUR. Oh.

Secretary MONIZ. Oh, yeah, yeah, yeah. This is big.

Ms. KAPTUR. In which State?

Secretary MONIZ. It is in California.

Ms. KAPTUR. In California.

Secretary MONIZ. I think it is in California. Yeah. Right.

Ms. KAPTUR. As I mentioned during that particular visit that you were so kind to arrange, when we began that company many years ago, with the help of DOE and its photovoltaic research, actually, way back in the 1980s, long before it was ready for prime time, the founder of the company said to me—and he is no longer living, Dr. Harold McMaster—he was waiting for the day when America would build a solar field 100 miles by 100 miles and backload the United States.

He was such a visionary. He was one of the greatest scientists and businessmen I have ever met in my life. And he, Norm Nitschke, and a lot of the scientists from our region, we are just so proud of them. They didn't grow up in a major population center. They grew up in Defiance, Ohio, and western Ohio. And they didn't have an MIT right there. But they founded this incredible company.

So I just wanted to put that on the record and urge you forward in these programs.

I wanted to also associate myself with the remarks of the Congressman who talked about the energy and water nexus in your testimony. And just to say that whatever the 150-page report recommends—and I will go back and read it; I haven't—that the needs of struggling cities be thought through and how their water, wastewater, energy needs are thought about, to help them save money in carrying out their major public responsibilities. So the energy water-wastewater nexus related to America's urban communities, in particular, where the costs have gone up, many of the systems are aging, and I think the power piece is really important.

So I just wanted to put that on the table.

Secretary MONIZ. Uh-huh.

Ms. KAPTUR. My questions, actually, are: You have created a jobs council, I am told, at the Department. And I am wondering if you could take a few minutes to explain what you hope to achieve with this council. And could we consider targeting investments within the Department to places that still have not recovered all of the jobs lost during the Great Recession?

Secretary MONIZ. Well, the Jobs Strategy Council is, again, another council, but we are trying to bring together people to make sure we are focused on maximizing the job opportunities from the various things that we are doing.

Part of that is—and I should add, we have hired two excellent people, brought on board as advisors to me. One is a fellow named Dave Foster, who came out of a union background but was the founding executive director of the BlueGreen Alliance.

And so this is a lot of training programs. Well, of course, the President has emphasized community colleges. We have a lot of—and are building up a lot of community college programs focused on specific areas.

Actually, another—this is a little bit to the side, but another program which I think is very interesting is our Minorities in Energy program. We have the Women in Clean Energy program and Minorities in Energy program to try to broaden our demographic.

And on the Minorities in Energy, an example of how we are targeting areas that are important to DOE and yet are building up a workforce is we have a cybersecurity program we just established, headquartered at Norfolk State University, a historically black college, which already has a cyber program. And so we have a consortium of 13 HBCUs, 2 laboratories, and a high school, trying to take care of our cyber workforce in the future.

So it is workforce training and jobs. A lot of the jobs—of course, things like the QER, by the way, the Quadrennial Energy Review, when it looks at the needs that we have for rebuilding and building 21st-century infrastructure, that is a huge job driver. And so that is another discussion I think maybe we can have over the next few months.

Ms. KAPTUR. I wanted to comment, Mr. Secretary, if I could, that the weatherization program that the Department funds is one that I have supported. But just in the way that Coke, Coca-Cola, reinvented its colors, I think that, as we advance that program, maybe that jobs council could also include people from the weatherization——

Secretary MONIZ. Yes. It will.

Ms. KAPTUR [continuing]. Effort, because I think we could do so much more.

Secretary MONIZ. Yes.

Ms. KAPTUR. As these programs are handled through the States—depends if the State is really conscious of what these programs do—they could do so much at the local level, but they are kind of separated. They are not well-integrated into the new technologies. They tend to look at it as an insulation program.

Secretary MONIZ. Uh-huh.

Ms. KAPTUR. Yet you have new grid, you have new technologies. We have the opportunity to train minorities and women in the building sciences. And I just think that there is a lot more that could happen there.

So I appreciate your listening to my comments.

I wanted to move to the leveraging the national labs. And I wanted to ask you, can you see a way that some of the assets of the labs could provide benefits to areas of the country where their expertise is sorely needed and where the national labs have no presence, especially—and, again, in the manufacturing heartland, where, other than Argonne—and, by the way, they have linked to cities in a way that I think is really important. They don't have a lot of resources, but they are thinking about how to retool some of these areas.

How do we leverage the labs to provide benefit to those areas of the country where they don't exist?

Secretary MONIZ. Right. So I think one of the things, then—and you have made that point strongly. And I think we need to think about ways of—I think what the labs are and what they do we probably haven't made as widely available as we could.

So if I take our trip last Friday to Ohio, for example, you mentioned this issue of algal blooms in the water, for example, well, that is a case where our Berkeley Laboratory I know has some capability.

Another area is the discussion of revitalization of the downtown Toledo area. Well, that is a case where we are looking at an integrated way, including with energy needs. We have, certainly, talent in our labs.

I will give you another example, last example. We put in very modest matching funds, in this case with the State of New Jersey, to design a micro-grid that was particularly important for resilience. And they then used that design to go out and get a huge grant, an award from someone else, from Department of Transportation, in fact.

So those are the kinds of things where one could do modest seed funding of design projects that would then have a community or a town or a county or a region available to compete for bigger funds.

Ms. KAPTUR. And, Mr. Secretary, you mentioned——

Secretary MONIZ. I should have added: And one of our labs did that design, together with New Jersey—Sandia, in that case.

Ms. KAPTUR. Well, I appreciate your thinking about this. You have many responsibilities, and making your department even more relevant to what happens across our country.

I wanted to just say a word about algae, if I could. I showed you the photo of what it looked like in Lake Erie last summer, and we face this challenge again.

Do you have ongoing work—you talk about algae-based feedstocks on page 7 of your testimony. Do you do work in the Great Lakes? Do you know whether all this algae floating around in these harbors and in these lakes, whether there could be a concerted effort by the Department to partner with those places that are really facing a daunting challenge?

Secretary MONIZ. So I don't believe we have anything at the moment, but, as I said, I know Berkeley Lab has some capabilities to perhaps understand the origin of the problem. Again, it is not to solve the problem, but probably to understand the origin of the problem.

Ms. KAPTUR. I will just take 10 seconds, and I know others want to ask questions. But I have a chip that was given to me by Dr. Gary Andersen out at the Berkeley Lab. Now I won't be able to find it, of course.

But, in any case, it is able to identify 1.7 million strains of DNA that are in water. And we really need this application in our region.

What we don't have—I asked him this question: Do you have something like this that would help us identify nitrogen and phosphorus, both dissolved and undissolved? And he said, "No, but we could."

Secretary MONIZ. Uh-huh.

Ms. KAPTUR. I am forced to say this because we were the community without water for over half a million people for 3 days. So we have to figure this out.

And I just mention that as being something that the Berkeley—they have been marvelous in trying to help, but some of the science is not in a usable form yet for us to be able to apply.

So I thank you very much, Mr. Secretary. And I will have other questions for the record.

Mr. SIMPSON. Thank you.

We have about 5 minutes left before the Secretary has to be gone.

Ms. Roybal-Allard.

Ms. ROYBAL-ALLARD. Thank you, Mr. Chairman.

Earlier, you mentioned the Weatherization Assistance Program, and I understand Mr. Honda did the same. And, as you know, this is a very important program that helps a family, you know, to reduce their costs so that they have money for other important things, like medicine and food.

Obviously, there are still going to be a lot of unmet needs in spite of the increase. And if you don't have the information but if you could submit it for the record, I would be interested in knowing what the geographical distribution of the Weatherization Assistance Program grant award is.

Secretary MONIZ. Okay. We will get back to you about that.

Ms. ROYBAL-ALLARD. Okay. Thank you.

That was the only thing I wanted to—I yield back.

Mr. SIMPSON. Mr. Fortenberry.

Mr. FORTENBERRY. Thanks, Mr. Chairman.

Mr. Secretary, briefly, you had mentioned earlier in your testimony two cellulosic facilities are coming along or coming on line.

Secretary MONIZ. Are on line.

Mr. FORTENBERRY. And where are those?

Secretary MONIZ. One is Iowa, and one is in Kansas.

Mr. FORTENBERRY. And just describe the process there and what the future of that looks like.

Secretary MONIZ. Well, basically, it is an enzyme-based process to break down the cellulose. That is fundamentally what it is. The secret sauce is the enzyme.

Mr. FORTENBERRY. Right. Those two plants look commercially viable, though?

Secretary MONIZ. Well, they are operating. The current projection that our program has with current technology, not with evolved technology, the current technology, is that, at scale, we are at about $3.20 a gallon.

Mr. FORTENBERRY. Okay.

Secretary MONIZ. So that has to come down another dollar, let's say, at least, still.

Mr. FORTENBERRY. Yeah. Okay. That is helpful to know.

Secretary MONIZ. Yeah.

Mr. FORTENBERRY. Could you go into where we are in terms of battery technology?

We had an energy expert come before another meeting and suggested that, within about 2 years, battery technology would be such that a homeowner, for instance, who went with a complete package of distributed generation of energy, perhaps solar—a combination of solar, wind, maybe even geothermal, could basically go off of grid with the battery technology that is around the corner. Is that true?

Secretary MONIZ. I am not sure I would say "yes" or "no" to that question directly, but certainly the cost of the batteries are coming way, way down. I say not "yes" or "no" because I think, in the end, the model is still going to be a lot of grid-connected even with distributed generation.

But that is a big issue. And, of course, it is a huge issue in terms of the future of the utility business model and public policy, as well.

Mr. FORTENBERRY. It really is.

Secretary MONIZ. Yeah.

Mr. FORTENBERRY. It is begging to much larger questions about——

Secretary MONIZ. Correct.

Mr. FORTENBERRY [continuing]. How this whole market moves forward.

Secretary MONIZ. Yep.

Mr. FORTENBERRY. And I think it is, frankly, exciting.

You mentioned also micro hydro systems. I don't represent the community anymore, but South Sioux City has a—they are in a reach of the Missouri River, where there is a significant drop over the course of that particular reach.

Secretary MONIZ. Yes.

Mr. FORTENBERRY. And they were trying to harness that. Very innovative community trying to do this.

Is that what you are talking about?

Secretary MONIZ. Interesting. Yeah, yeah, those are the kinds of projects, yeah. That, and there also could be—yes, and also things like, currently, unpowered small dams have some potential, as well.

Mr. FORTENBERRY. What does that mean, "unpowered small dams"?

Secretary MONIZ. They are small dams and rivers, but they don't have anything to convert——

Mr. FORTENBERRY. So they are just not——

Secretary MONIZ [continuing]. Energy. That is right. Right.

Mr. FORTENBERRY. Okay.

Thank you, Mr. Chairman.

Mr. SIMPSON. Thank you.

Mr. Honda.

Mr. HONDA. Thank you, Mr. Chair and Mr. Secretary.

Very quickly, a lot of focus on energy efficiency goes towards large-power-consumption devices, such as the appliances and motors. But the proliferation of consumer electronic devices, these kinds of things, means that their energy consumption is adding to a very significant level, not only in this country but globally.

So is the Department doing anything to address this ever-growing concern relative to small devices?

Secretary MONIZ. Well, in general, things like standby power, in some appliances at least, we do look at, yes, and set standards.

Mr. HONDA. Is there any thought moving this entire arena towards the same kind of program that we have, say, like Energy Star, where we can incentivize the companies to move towards that arena? Because we could save a lot of barrels of petroleum.

Secretary MONIZ. In terms of the Energy Star approach, I hadn't really thought about that, but I will look into it.

But the other issue, actually, is setting standards. For example, I mean, when I became Secretary, within 2 weeks or something, we had the standard for standby microwave power——

Mr. HONDA. Sure.

Secretary MONIZ [continuing]. Things of this type. And they all sound small, but then when you add them up, it is quite large.

Mr. HONDA. That would be my point.

Secretary MONIZ. Yeah.

Mr. HONDA. And I guess, if I can send you information on——

Secretary MONIZ. Please.

Mr. HONDA [continuing]. The stuff that we have been working on for about 4 or 5 years now——

Secretary MONIZ. Okay.

Mr. HONDA [continuing]. And get your attention, that would be really great.

Secretary MONIZ. That would be great.

Mr. HONDA. Thank you, Mr. Chair.

Mr. SIMPSON. Thank you.

Secretary MONIZ. EIA just did a—we should also send you—EIA just did a recent study on this issue of vampire power.

Mr. HONDA. Thank you.

Mr. SIMPSON. Thank you, Mr. Secretary, for being here today.

And let me personally say I really appreciate both you and your staff and your Under Secretary's willingness to work with members of the committee and actually come out to our districts and visit us. I know you were out in Idaho last August, and we invite you to come back and catch a few fish.

Secretary MONIZ. I still have my key to Idaho City.

Mr. SIMPSON. That is right. And as I said when you were out there, at least when you catch Idaho fish, those fish fight back, so it is kind of easier than some others—or harder than some others.

But I appreciate you and your willingness to work with our staff and get us the information we need. And we look forward to working with you as we try to put together this budget, not knowing yet what our allocation is going to be.

Secretary MONIZ. And we, also.

Mr. SIMPSON. Appreciate it. Thank you.

Secretary MONIZ. Thank you. Thank you all.

Mr. SIMPSON. The hearing is adjourned.

QUESTIONS FOR THE RECORD
SUBCOMMITTEE ON ENERGY AND WATER DEVELOPMENT
HOUSE COMMITTEE ON APPROPRIATIONS

Hearing on the 2016 Budget Request for the Department of Energy
Thursday, February 26, 2015

DOE MANAGEMENT

MANAGEMENT REFORMS FOR LARGE PROJECTS

Subcommittee. Mr. Secretary, last week the Government Accountability Office (GAO) released its High Risk List for 2015. The GAO reported that while the Department had generated a report claiming completion of all corrective actions to address its issues in project management, the Department is still struggling to stay within cost and schedule estimates for most of their major projects. GAO also reported that progress had not been made over the last year compared to what they had observed for the management of smaller projects in previous years.

Since the actions to date have not actually put the major projects on a path to success, will you be formalizing a new corrective plan targeted specifically to address those challenges on the major projects?

Secretary Moniz. I have been instituting changes to improve the Department's performance on major projects across the DOE enterprise on several tracks. One of the first actions I took was to reorganize the Department at the Under Secretary level to create an Under Secretary for Management and Performance focused specifically on improving project management and performance and bringing the Office of Environmental Management, the Office of Legacy Management and the Office of Management under the purview of this new Under Secretary. In addition, in August 2013 I established a Contract and Project Management Working Group and its findings were issued in the December 2014 report titled "Improving Project Management," which led to the implementation of several additional efforts to improve project management. These included strengthening the Energy Systems Acquisition Advisory Board (ESAAB), establishing a Project Management Risk Committee comprised of the most senior project management officials from each Under Secretary's office to advise the ESAAB, and improving the lines of responsibility and the peer review process.

Subcommittee. How will the project and contract management reforms you are taking address the root causes of the Department's management problems?

Secretary Moniz. As a Department, we are strengthening the Energy Systems Acquisition Advisory Board or "ESAAB." This board is comprised of the Department's most senior leaders and chaired by the Deputy Secretary. The ESAAB was originally charged with overseeing all projects larger than $750 million and making recommendations to the Deputy Secretary. However, as the number of large projects has decreased over the years, the frequency of ESAAB meetings has correspondingly decreased.

The ESAAB will now be supported by a new Project Management Risk Committee consisting of the Department's top project management experts. These project management experts are the same people who spent a year developing key project management recommendations and writing the "Improving Project Management" report.

The Project Management Risk Committee will provide risk assessment and advice to me and the Department's senior leadership. It will also review and analyze projects before all critical decisions and baseline change proposals and provide in-house consulting to projects across the entire Department. The committee will meet twice a month at a minimum and focus on projects with a budget of $100 million or more.

Also, going forward, the Department is improving accountability by ensuring that for each project the appropriate Under Secretary will now designate a clear owner who has budgetary and programmatic responsibility. There must also be a clear line of responsibility that extends from the Under Secretary to the project owner to the Federal Project Director.

Subcommittee. Can you discuss the actions that the Department has taken over the past year with respect to each of the Department's major construction projects to get those projects back on track? That includes the Waste Treatment Plant, Uranium Processing Facility, MOX project, Salt Waste Processing Facility, and the Chemistry and Metallurgy Replacement (CMRR) project at Los Alamos?

Secretary Moniz. DOE manages some of the largest, most complex, and technically challenging projects in the public or private sector and these projects bring unique management challenges with which the Department has been struggling. Although project management reforms over the past several years have begun to bear fruit, many large projects are over budget

and behind schedule, which is why I have made improving project management one of my highest priorities.

We have had some major project successes across the Department. For example, for years we had been planning a multi-billion dollar construction project to replace the nation's uranium manufacturing capabilities, but we had started to see signs of cost overruns, schedule delays, and design issues. To address these issues, the Department asked Oak Ridge National Laboratory to lead a peer review of the project.

The results of this review compelled the Department to make two major changes: establishing a Uranium Program Manager to create an overarching uranium manufacturing strategy, and focusing this strategy on a smaller, modular approach instead of one large facility to replace the old facilities. The new strategy will minimize the need for newly constructed space – saving money in the long run – and allow us to begin reducing the hazards in the old facility even before finishing construction of the Uranium Processing Facility.

CMRR's design approach was revised and clear program/project owners were identified for this major system acquisition project. By following our processes, the CMRR Project Team achieved a revised Critical Decision 1 approval from the Deputy Secretary in 90 days. That will save the taxpayers approximately $3 billion thus reducing the total estimated costs for the remainder of the project to $1.5 – 2.0 billion. In addition, the CMRR Project, just received approval from the Deputy Secretary to proceed with long-lead procurements and decontamination and decommissioning work, allowing the Department to move forward to meet its commitments to cease programmatic operations in the CMR facility.

Additional efforts are now under way to address the challenges confronting several of the other large, one-of-a-kind projects. For the Waste Treatment and Immobilization Plant project, we have submitted a proposal to the court to amend the Consent Decree. DOE's proposal involves, among other things, the installation of new infrastructure that will allow DOE to begin vitrifying low activity waste by the end of 2022, while efforts continue to resolve technical issues at the Pretreatment Facility. The improvements to the project management system, including the new project risk committee, will bring a renewed focus on delivering this new infrastructure on schedule.

For MOX, plutonium disposition activities will be sustained while the Department conducts the congressionally mandated independent validation of options for disposing of 34 metric tons of weapon-grade plutonium. However, the current MOX approach is significantly more expensive than anticipated, even when considering potential contract restructuring and other improvements that have been made to the MOX project. The Department has requested that Aerospace Corporation, a Federally-Funded Research and Development Center (FFRDC), independently assess and validate the Department's analysis of plutonium disposition options that was issued in April 2014. This independent analysis will be submitted to Congress.

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT DIRECTED REFORMS

Subcommittee. Mr. Secretary, last year the Committee directed the Department to reform its accounting practices for its Laboratory Directed Research and Development program after it became clear that there was no transparency as to how much individual activities funded by Congress were being taxed to pay for the program. After some detailed investigation, we found that as much as ten percent of the funds provided for some activities were being redirected to LDRD, far in excess of the 6% statutory maximum. For a $10 billion program like the B61 life extension program, that would mean $1 billion would need to be appropriated just to pay the LDRD program contribution.

Will the Department meet its deadline to enact this accounting change for the LDRD program by October 1, 2015?

Secretary Moniz. The Department's laboratories are currently working to implement any changes needed to ensure compliance with Section 311 of the Consolidated and Further Continuing Appropriations Act, 2015 by October 1, 2015. The Department is drafting revisions to its internal Directive on LDRD to incorporate these new requirements by the October 1, 2015 deadline.

Subcommittee. Do you have any concerns about taking a more consistent and transparent approach as directed by the Committee?

Secretary Moniz. The Department continues to support a consistent and transparent approach to Laboratory Directed Research and Development (LDRD). The laboratories are currently working to implement the changes needed to ensure compliance with Section 311 of the Consolidated and Further Continuing Appropriations Act of 2015.

PUBLIC DISSEMINATION OF DOE RESEARCH

Subcommittee. Mr. Secretary, your Department supports the largest portfolio of basic science research in the country. This research is critical in maintaining this nation's scientific innovation and leadership. One of the pillars of federally funded research is that the research results should be shared publicly, when appropriate. A recent Inspector General report found that nearly a quarter of the research funded by the Department through financial assistance awards was not shared publicly.

How does the Department maintain oversight to ensure this research is shared properly?

Secretary Moniz. The public dissemination of research results is an issue that the Department takes very seriously. The IG report from 2014 that you mention made a number of helpful recommendations regarding the timely collection and release of close-out, technical reports. The Department has accepted these recommendations and implemented the necessary changes, which focus primarily on improved tracking and communication between our funding recipients, program managers, and DOE's Office of Scientific and Technical Information (OSTI), which has primary responsibility for collection and dissemination of research results.

In addition to these improvements, the Department has been proactive in its approach to public access to peer-reviewed publications and data resulting from federally funded research. DOE was the first agency to publish its Public Access Plan in response to guidance from the White House Office of Science and Technology Policy. To ensure public access to full-text versions of peer-reviewed publications, researchers are now required to submit the accepted manuscripts for all journal articles resulting from DOE funding to OSTI. In addition to the many public data repositories supported through DOE research funding, the Department has recently piloted the requirement that proposals for research funding include a Data Management Plan as a way to encourage community-driven data sharing and preservation practices, and ensure access to data associated with peer reviewed publications. In line with the recently issued Open Data Policy, the Department has published a machine-readable Public Data Listing of all publically available datasets maintained by the Department.

Subcommittee. This has been a recurring problem with grant recipients that the IG has identified. Can you assure us that you will work towards remedying this problem?

OFFICE OF TECHNOLOGY TRANSITIONS

Subcommittee. I followed the recent announcement of the Office of Technology Transitions with interest. The Subcommittee has encouraged your Department to emphasize and support technology transfer and this concept is integral to commercializing the Department's numerous research activities.

How will this office work within the Department and prioritize areas where technology transfer can occur?

Secretary Moniz. The Office of Technology Transitions (OTT) will serve as a DOE-wide functional unit that coordinates the commercial development of DOE's research outputs, with a mission of expanding the short, medium and long-term commercial impact of DOE's portfolio of RDD&D activities. To accomplish this, OTT will execute technology transfer leadership and coordination responsibilities assigned to the Technology Transfer Coordinator in the Energy Policy Act of 2005 (EPAct 2005), as well as coordinate DOE-wide activities to transition technologies through the innovation cycle, to derive the maximum impact for DOE's investments.

DOE maintains a portfolio of RDD&D activities across the innovation cycle, spanning early stage discovery-research through to commercial-scale demonstrations. The word 'transitions' specifically recognizes the multiple, interlinked connections among these different stages of the innovation cycle that are needed to reach commercial impact. For example, the Office of Science might support basic research at a national laboratory resulting in an energy-related technology at TRL 1-2. If this technology is tracked and identified as promising by an applied program office, it could be effectively transitioned into applied research, potentially at another lab or university. From there, if it is still identified as promising, it could be further transitioned into a technology maturation program (e.g. the Technology Commercialization Fund) and other programs aimed at commercializing and scaling-up DOE-sponsored technologies.

OTT will work closely with DOE's senior leadership, program offices, national laboratories, and other stakeholders, including industry, to plan, prioritize and execute these functions. To ensure that OTT is strongly aligned with the Secretary and senior leadership, the OTT Director serves in

a dual capacity as the Technology Transfer Coordinator performing statutory responsibilities described in EPACT2005 and as the Secretary's primary advisor on all matters relating to technology transfer and commercialization activities. OTT will report to the Office of the Under Secretary for Science and Energy, providing central visibility across the Science and Applied Programs. OTT will also engage internally with the National Nuclear Security Administration, Environmental Management, Loan Program Office and Advanced Research Projects Agency – Energy (ARPA-E) on technology transfer and commercialization activities. OTT will regularly interact with and utilize the national laboratory-wide DOE Technology Transfer Working Group in the advisory role for which it was created under EPAct 2005.

Subcommittee. What are the biggest challenges the Department faces when trying to transition its technology into the commercial sphere and how will this new office address them?

Secretary Moniz. DOE faces a wide variety of challenges in transitioning DOE-sponsored technology and knowledge into the commercial sphere, ranging from information gaps to high market barriers that impede the scale-up and deployment of advanced energy-related technologies. In terms of the national laboratories, DOE has collected input from a wide variety of stakeholders on the barriers and opportunities for transitioning DOE-sponsored technologies and knowledge into the commercial sphere. Through this process, DOE has identified several areas where additional improvements could be made:

- Increasing the relevance of laboratory capabilities to industry
- Raising industry awareness of laboratory capabilities
- Developing strong, trusting relationships between laboratories and industry
- Ease and affordability of industry access to laboratory capabilities
- Laboratory policies and culture related to commercial impact

With the OTT, the Department is committed to helping technologies transition to the market, based on closer collaboration with industry and recognizing the multiple, complex linkages among different stages of

research and demonstration that are needed to reach commercial impact. To address these and other challenges, OTT will develop and implement DOE's strategic vision and goals for technology commercialization and engagement with industry.

Subcommittee. Are there additional organizational or funding changes that should be made?

Secretary Moniz. Maintaining a central coordinating office for technology transitions at DOE will be necessary to meet Congressional and stakeholder expectations for improved technology transfer and commercialization performance. OTT is currently developing a strategic vision and execution plan for the Department's technology transition activities, and OTT will work closely with the program offices, universities, the private sector and national laboratories to carry out the authorized mission of the Energy Technology Commercialization Fund.

WHISTLEBLOWER PROTECTIONS

Subcommittee. Mr. Secretary, the Subcommittee has been following events at Hanford involving nuclear safety culture and we are aware of the emphasis that DOE management has placed on making improvements. We are aware that you initiated an investigation in response to allegations of whistleblower retaliation at Hanford, but that the IG was unable to reach a conclusion because the contractors involved refused to make documents and emails generated by the DOE contract available.

Do you agree that DOE contractors are exempt from investigation based on the argument that a contractor may have a future legal dispute or because a contractor thinks the IG is not looking at relevant information? Do you intend to enforce the clause in DOE contracts that requires contractors to produce these documents?

Secretary Moniz. DOE does not agree that contractors are exempt from investigations conducted by the Inspector General. In the particular case you referenced, DOE's Chief of Staff requested the IG to conduct a review of the circumstances surrounding the termination of Ms. Donna Busche by URS Energy and Construction, Inc. In the course of the IG's investigation, attorneys representing Bechtel and URS asserted attorney-client or attorney work product privilege over certain specific documents and thus withheld their production to the IG.

The Department took many steps to facilitate and support the IG's review. The IG report specifically acknowledges that senior officials at the Department encouraged the contractors to cooperate fully with the investigation.

Rather, the original purpose of the contract clause in question was not to require contractors to make available information that is subject to attorney-client privilege when a contractor is engaged in ongoing litigation concerning the same subject matter. The Department updated the Acquisition Regulation in 1997 to address concerns about the Freedom of Information Act (FOIA). The Department distinguished between government-owned and contractor-owned records and determined that "contractor-owned records in the possession of the contractor are not subject to FOIA, even though they are accessible to the Department." 62 Fed. Reg. 34855. Notably, the clause permits "inspection, copying, and audit by the

Government or its designees at all reasonable times (emphasis supplied)." It is unclear if requiring production of privileged materials when a contractor is engaged in ongoing litigation concerning the same subject matter is properly deemed a "reasonable time". The Department is unaware of any instance in which the clause you reference has been used to override the attorney-client privilege in the context of ongoing litigation, as is the case here.

Subcommittee. Has the Department taken any action to ensure the ability of the Inspector General to perform his duties as a result of these events? Or is there another way to hold contractors accountable and ensure cooperation, perhaps by strengthening contract enforcement mechanisms?

Secretary Moniz. The Department encouraged the contractors to cooperate with the IG's investigation, as noted in the IG report. While DOE does not have privity of contract with URS under the Waste Treatment and Immobilization Plant contract, the prime contractor was encouraged to ensure that all direction given to the contractor was to be flowed down to URS through the subcontract with URS, and that the prime contractor was to ensure that URS complied with the direction in accordance with its subcontract. The Department agrees that it is important to hold contractors accountable, and the Department intends to review the appropriate section of DOE's acquisition regulations.

Subcommittee. Is it true that the Department has reimbursed over a million dollars in contractor legal expenses related to this particular whistleblower case – in other words, that DOE has paid the costs of those lawyers to argue they have a basis to exempt themselves from an IG investigation?

Secretary Moniz. No. Under Departmental regulations, DOE may find that legal costs incurred by contractors related to whistleblower allegations are not allowable if, after the legal proceedings conclude, the whistleblower's allegations are substantiated. In cases where the whistleblower's allegations are unsubstantiated, the Department may find the contractor is entitled to receive final payment for the incurred costs.

Where the whistleblower's claims are unsubstantiated and the contractor's associated legal costs may be allowable, the Contracting Officer determines allowability after consulting with legal counsel to consider the terms of the

contract, relevant cost regulations, and the relevant facts and circumstances, including federal law and policy prohibiting reprisal against whistleblowers.

At this time, there has been no final resolution of the merits of this particular individual's pending claims against the contractor (and/or subcontractor). Thus, a final determination on the allowability of the contractor's legal defense costs is premature. DOE has directed the contractor to segregate the legal costs associated with the defense of the wrongful termination/whistleblower reprisal lawsuit, as well as legal costs associated with the related IG investigation; such legal costs have been segregated by both Bechtel and URS. DOE has not reimbursed any contractor legal costs associated with the IG investigation.

WESTERN AREA POWER ADMINISTRATION OVERHEAD COSTS

Subcommittee. Some Western Area Power Administration customers have raised concerns about large increases in overhead costs since the implementation of offsetting collections, sometimes called "net zero". The fiscal year 2016 budget request shows an increase above last year of $8.5 million for Program Direction activities, including an increase of $3.4 million in what the power customers will pay in annual expenses.

Mr. Secretary, can you please describe the factors that are driving Western's Program Direction costs higher?

Recognizing that the four power marketing administrations have long operated as distinct entities within the Department of Energy – a structure strongly supported by Congress – can you please discuss what role, if any, the Department plays in developing or reviewing the PMAs' budget requests, including overhead costs?

Secretary Moniz. Western Area Power Administration's (WAPA) FY 2016 President's Budget Request for Program Direction activities within its Construction, Rehabilitation, Operation and Maintenance account (CROM) represents an $8.5 million increase (or 3.7 percent) over the FY 2015 level. This increase is comprised of the following: $2.6 million for salaries and benefits; $4.7 million in support services (which includes replacement of WAPA's core financial system in order to maintain critical financial functionality as well as increased monitoring and management efforts to ensure compliance with the Federal Energy Regulatory Commission's new Critical Infrastructure Protection Reliability Standards requirements); and $1.2 million for engineering services for transmission line rebuilds as well as support for WAPA's Integrated Vegetation Management Program.

The Department works in concert with the Power Marketing Administrations to develop program budgets. An annual detailed review and briefing is conducted at which time variances, program drivers, and cost containment efforts are discussed.

DOE CROSS-CUTTING INITIATIVES

Subcommittee. Mr. Secretary, in last year's budget request you identified several cross-cutting initiatives in an effort to increase coordination across the Department on high-priority activities. This year's request takes the same approach but adds one new cross-cut while taking out another. This new cross-cut, the Energy-Water Nexus, brings attention to the relationship that water has in energy production.

Can you walk us through how the Energy-Water Nexus focus will improve energy and water resiliency in the United States and the process you used to identify this as a cross-cut?

Secretary Moniz. Several current trends are increasing the urgency to address the energy-water nexus in an integrated way. First, precipitation and temperature patterns across the United States are undergoing rapid change with increasing frequency and intensity of extreme events. Second, U.S. population growth and regional migration trends indicate that the population in arid areas such as the Southwest is likely to continue to increase, further impacting the management of both energy and water systems. Third, introduction of new technologies in the energy and water domains could shift water and energy demands. Moreover, policy developments addressing water impacts of energy production are introducing additional complexities for decision making.

Taking into account the strong interest in the topic expressed by members of Congress and other stakeholders, both domestic and international, the DOE proposes to pursue a crosscutting suite of activities addressing the energy-water nexus.

DOE's program offices have done work addressing the energy-water nexus for many years; however, this work has historically been organized on a program-by-program basis, where water has been considered among a number of other factors. In June 2014, the Department released a report on the nexus, The Water-Energy Nexus: Challenges and Opportunities, which established a framework and identified opportunities for the DOE to leverage its capabilities for the Nation's benefit in better characterizing coupled energy-water systems and improving their resiliency. This framework is the foundation for the FY 2016 proposal for coordinated

investments to advance data, modeling and analysis; technology development; and policy analysis and stakeholder engagement.

This crosscut emphasizes a data, modeling, and analysis platform to further improve understanding and inform decision-making for a broad range of users. This platform will enable DOE and other decision-makers to understand the interplay among energy, water, and other systems at various scales. Moving forward, the platform will help DOE to target future technology R&D and technology assistance efforts to the greatest challenges and opportunities in improving resiliency of coupled energy-water systems.

Based on analysis completed thus far, the crosscut also strategically targets two areas of technology R&D:

•Treatment, Management, and Beneficial Use of Non-Traditional Waters in Energy Systems will advance treatment technologies for producing potable water through carbon capture and storage and develop technologies and management practices for hydraulic fracturing to reduce the volume of freshwater demand, produce less water that requires disposal, and recycle flowback water as alternatives to the use of 100 percent freshwater for oil and gas extraction.

•Sustainable Low Energy Water Utilities will pursue processes, technologies, and systems that increase energy efficiency and energy recovery for water and wastewater treatment. This will include both enhanced technical assistance and R&D in areas such as more energy efficient pre-treatment for anaerobic digestion processes, gasification, and pyrolysis; reductions in the energy intensity of denitrification, and more energy efficient biosolid to energy conversion processes.

Finally, the crosscut proposal funds policy analysis, outreach, and stakeholder engagement to better target and leverage DOE investments to unique regional, state, and local contexts.

Subcommittee. The cross-cut that was eliminated from this year's budget request dealt with improving communication with states and local communities. It seems that the role of cross-cuts is to highlight specific priorities of the budget request. The message here is that better communication with states and local communities is not as important as the other cross-cutting activities. Is that the case?

If not, why was it removed?

Can you describe the activities the Department is currently undertaking to improve its communication with states and local communities?

Secretary Moniz. While improving communication with states and local communities was a concerted effort in FY 2015, it is fundamentally different from the structured crosscut framework proposed in the FY 2016 Budget. The Department is committed to maintaining an active dialogue with states and local communities to ensure that their views are considered as part of the Department's decision-making processes and providing access to information about Departmental programs and activities. Over the past year, the Department focused on increased integration and coordination of state and local outreach through the Office of Congressional and Intergovernmental Affairs (CI). Through the overarching mission of CI the Department has institutionalized several internal changes to increase and improve communication with states and local communities. These activities remain a high priority for the Department and have been extremely well received by external stakeholders. This includes establishment of a Departmental Intergovernmental Working group of senior representatives from all Departmental program offices that serves as a forum for decision-makers to quickly identify and address problems, leverage opportunities to better work with state and local leaders, and share best practices.

Through the Office of Congressional and Intergovernmental Affairs, the Department conducts targeted outreach to state and local leaders about the latest developments in Department news, events, technical assistance, funding opportunities, and other policy priorities. Additionally, the Department recently improved access to relevant DOE resources such as technical assistance and funding opportunities via centralized locations. This includes creation of a Technical Assistance Web Portal that manages incoming inquiries to ensure rapid response thorough follow-up. http://energy.gov/ta/state-local-and-tribal-technical-assistance-gateway. Responsive to feedback from state and local constituencies about the difficulty of identifying access to funding opportunities and financing mechanisms, the Department established a Finance Solutions Center web portal which provides a menu of available financing mechanisms for deploying energy and energy efficiency projects, and resources to seek and share best practices among states and regions. http://energy.gov/public-services/funding-financing. Finally, strategic efforts have been implemented

to engage with a wider set of intergovernmental organizations including but not limited to the National Governors Association, U.S. Conference of Mayors, and the National League of Cities.

UPCOMING LAB COMMISSION REPORT

Subcommittee. Mr. Secretary, one of the major themes the National Laboratory Commission identifies in its interim report on the effectiveness of the National Laboratory system is a broken trust in the relationship between DOE and the National Laboratories. The interim report notes that the strain in the relationship stems from a high level of risk aversion and uneven levels of risk management between DOE headquarters and field offices.

What actions do you expect the Commission will propose to repair this broken trust and create an ideal relationship between the national labs and DOE? How will the Department address this problem in the meantime?

Secretary Moniz. While I prefer not to speculate what conclusions the Lab Commission will arrive at in its final report, I look forward to its recommendations. I can share with you what the Department has been working on during my tenure to strengthen and enhance the partnership between the Department and the laboratories.

Improving the Department's relationship with the national laboratories through strategic engagement and transparency has been one of my top priorities since I took office. To that end, I reorganized the Department in FY2013 to better integrate key offices and programs, bringing an "enterprise" approach to program management, policy development, support functions and administrative operations, and established several boards and councils of advisors that provide enterprise-wide advice and analysis to address key policy and management challenges and to better integrate the important contributions of the 17 National Laboratories within the DOE enterprise.

I believe that any new actions to change the strategic direction of the National Laboratories should have the full participation and support of the top leadership at the Department and reflect the engagement of the National Laboratory community. To this end, we have established a regular strategic dialog with the labs through several new leadership councils involving lab directors, Chief Operating Officers (COOs), and other key managers. I also meet with the full National Lab Directors' Council (NLDC) – all 17 lab directors – twice a year to discuss a broad range of issues identified by the labs. By engaging a system of new and existing Departmental councils and

boards we are making progress in coordinating issues that cut across Departmental organizational lines. These councils provide an additional means for the Department to strategically engage with the National Laboratory directors and/or laboratory senior leaders, including in the following ways:

•National Laboratory Directors' Council (NLDC), which provides one mechanism for the laboratory directors to better coordinate key issues across the whole DOE laboratory complex. It is the mission of the NLDC to collaborate with DOE on strategic issues and concerns of broad interest and provide a forum for discussing matters that impact effective and efficient mission execution.

•National Laboratory Policy Council, which brings the labs into strategic level discussions of the Department policy and program planning process and offers a forum for the Department to provide strategic guidance on National Laboratory activities in support of Departmental missions.

•National Laboratory Operations Board which works to improve management and performance in order to more effectively and efficiently execute the missions of the Department and the National Laboratories.

We are developing and implementing new management strategies at the program level to enhance the relationship and engage in strategic and operational discussions with the labs at a senior level. For instance, the Office of the Under Secretary for Science and Energy is working across its programs to implement best practices and new approaches to strategic program alignment, strategic engagement of the national laboratories, and performance management. Based primarily on the laboratory evaluation process developed by the Office of Science, the Department is working together to review best practices for performance management of the National Laboratories.

Other efforts underway throughout the Department designed to improve alignment among DOE programs and strategic engagement with the national laboratories include:

•Tech Teams charged with integrating certain activities of the Department around high-priority, high-impact research areas.

•An annual "Big Ideas Summit" designed to identify new research initiatives, organized by the Office of the Under Secretary for Science and Energy. The annual summit serves to bring together subject matter experts from DOE's science and energy offices as well as Energy Policy and Systems Analysis (EPSA), the National Nuclear Security Administration (NNSA), and all 17 National Laboratories to collaboratively explore and propose innovative ideas to advance solutions to key energy issues.

•Formation of a joint DOE—National Laboratory Consortium (the Grid Modernization Laboratory Consortium) to help organize the Department's efforts in Grid Modernization.

•Creation of the NNSA Council where the NNSA Administrator and other senior NNSA Federal Leadership meet quarterly with laboratory directors and plant managers to discuss strategic direction and resolve issues.

These examples are by no means exhaustive, but provide a sample of relevant activities underway.

In addition to the Lab Commission study, I have asked the Secretary of Energy Advisory Board to make recommendations on important issues related to improving the management of the labs.

Subcommittee. The interim report cites a lack of strategic planning across the national lab complex and also in how the labs support other federal agencies. Indeed, this was one of the main tasks the Committee focused on when we created the Commission.

What is the Department doing to involve the labs in the strategic planning process?

Secretary Moniz. As part of its strategic planning process, the Department seeks input from the National Laboratories, particularly where that planning intersects with the work of the labs. For instance, the National Laboratories provided input to the current DOE Strategic Plan. Programs also seek input from the laboratories and others as appropriate in their strategic planning efforts.

Additionally, I formalized a strategic dialog process by establishing a National Laboratory Policy Council (LPC) to obtain input from the National

Laboratory directors regarding key Departmental initiatives and for the Department to provide strategic guidance on activities of the laboratories. I also established a National Laboratory Operations Board (LOB) under the new Under Secretary for Management and Performance office which includes senior lab and program members and engages in efforts to more effectively and efficiently execute the missions of the Department and the National Laboratories.

For instance, the LOB led an effort to assess the condition of the general purpose infrastructure at the labs and NNSA plants and to prioritize infrastructure funding through a cross-cutting budget initiative. This effort, which involves the Department and the laboratories working together, is seeking to establish a sustainable trajectory for the Department's infrastructure on an enterprise-wide basis.

Changing the name of Work for Others (WFO) to Strategic Partnership Projects (SPP) is an indication of both the importance and strategic value we place on these relationships. In concert with the name change, the LOB led a joint effort between the Department and the labs to develop a new policy statement on SPP that both sets the context in which DOE and its labs should pursue SPP and declares the strategic value that the Department sees in these endeavors.

In April, DOE held the second annual Laboratory Ideas Summit, where the labs generate new ideas for potential research direction for the Department. Several of last year's laboratory ideas transitioned to crosscutting activities which involve multiple program offices and National Laboratories, and are featured as components of the DOE FY2016 Budget Request. Examples include the new cross-cutting activity on Grid Modernization and Subsurface Science and Engineering.

Subcommittee. How is the Department institutionalizing this effort as it relates to supporting other federal agencies?

Secretary Moniz. Institutionalizing changes is an ongoing goal and I look forward to both the Lab Commission and SEAB's recommendations as they relate to the changes we are making here at the Department.

NATIONAL SECURITY

DOMESTIC URANIUM ENRICHMENT

Subcommittee. Mr. Secretary, your fiscal year 2016 budget request includes $100 million to continue operating uranium enrichment centrifuges that were constructed as part of a joint demonstration project with the United States Enrichment Corporation, or USEC (now known as Centrus).

There are no milestones or programmatic goals associated with this effort and the Department has yet to provide more than a basic sketch of when newly enriched uranium will be required to meet defense needs. There is an interagency review in progress that is supposed to be performing analysis to verify those requirements. In the meantime, this budget request adds to the nearly $300 million already spent to keep these centrifuges spinning while the Department continues to deliberate.

How would you evaluate the progress made by the Department in understanding the actual uranium requirements and the best use of taxpayer dollars to meet those requirements?

Secretary Moniz. The Department is making progress in evaluating national security enriched uranium requirements and the results of this evaluation will be included in a report to Congress that is currently in coordination.

Subcommittee. When will we be hearing from you on whether you intend to ask Congress for funds to pursue a near term investment, such as building out the national security train or some other option?

Secretary Moniz. The Department intends to provide a report to Congress following its final coordination that includes an accounting of the current and future availability of enriched uranium and tritium to meet defense needs. The report will also include a cost-benefit analysis of each of the options available to supply enriched uranium for defense purposes, and a preliminary cost and schedule estimate to build a national security train. This report will inform discussions regarding the path forward for meeting U.S. needs for enriched uranium.

Subcommittee. Why should Congress continue to fund this program when so few answers have been provided? Where does this program fall within your priorities for the defense portion of your budget request?

Secretary Moniz. The Department is responsible for a number of national security missions including those that require a reliable supply of enriched uranium in varying assays and forms. This includes low-enriched uranium (LEU) for commercial light water reactors involved in tritium production, and highly enriched uranium (HEU) for Naval propulsion. The Department is currently evaluating different options for meeting U.S. needs for enriched uranium and has taken interim measures to maintain the current centrifuge capability at the American Centrifuge Plant in Piketon, Ohio in warm standby while the detailed analysis requested by Congress is performed.

Subcommittee. The Administration's budget request includes significant funding above the levels in the Budget Control Act. How would this activity fare if those levels are not achieved?

Secretary Moniz. The President's budget request proposes to restore discretionary spending to levels that would continue to support our national security efforts, including economic growth and opportunity. These investments would be offset by a balanced package of spending cuts, tax loophole closures and program integrity measures. If the sequestration cuts are upheld, then these investments would be at risk.

ENVIRONMENTAL CLEANUP

WASTE ISOLATION PILOT PLANT SHUTDOWN IMPLICATIONS

Subcommittee. Mr. Secretary, the Waste Isolation Pilot Plant was formerly the nation's only operating permanent repository for nuclear waste. There was interest in expanding the amount of waste that would be emplaced in WIPP. This shutdown has both programmatic and national level implications.

What are the implications of the shutdown to the Department's transuranic waste programs? How many milestones have been missed or are now unlikely to be met?

Secretary Moniz. Transuranic (TRU) waste generators other than the Los Alamos National Laboratory (Idaho, Oak Ridge, Savannah River Site and Argonne National Laboratory) are continuing characterization and certification activities and are providing interim storage of TRU waste for eventual shipment to the Waste Isolation Pilot Plant (WIPP). Initial focus after resumption of operations at WIPP will be on the emplacement of waste generated onsite during recovery activities and waste currently stored in the WIPP surface facilities (these wastes were received but not emplaced prior to the events).

It is premature at this stage of the recovery to predict the effects of the WIPP suspension on other site milestones. The timing for resumption of shipments from generators offsite currently is uncertain and will be based on a variety of factors. In determining the rate of shipments among sites, DOE will consider numerous technical and programmatic factors (such as compliance commitments, proven acceptance capabilities, on and off-site storage capacities, technical issues, cost, schedule, etc.)

Subcommittee. What are the implications for repository programs in the US and abroad?

Secretary Moniz. As early as the 1950s, the National Academy of Sciences recommended deep disposal of long-lived transuranic radioactive wastes in geologically stable formations, specifically identifying salt formations as promising for particularly long and secure containment. Nothing about the Waste Isolation Pilot Plant (WIPP) events of February

2014 calls into question this National Academy recommendation. Further, as stated in DOE's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste (January 2013), there is international consensus that geologic repositories represent the best known method for permanently disposing of used nuclear fuel and high-level radioactive waste, without putting a burden of continued care on future generations. All the experts' observations and recommendations to resume WIPP disposal operations involve such operational issues as equipment maintenance, facility housekeeping, waste treatment, and safety systems and culture. None of the experts' reports identified any problem with deep geologic disposal or the use of deep salt formations as a host medium.

NUCLEAR ENERGY

ADVANCED TEST REACTOR AT IDAHO NATIONAL LAB

Subcommittee. Mr. Secretary, the Advanced Test Reactor serves an important role for our nuclear navy, as well as for civilian nuclear energy research and development. The ATR is an aging reactor that will require significant investment to keep it operating into the future, but I believe keeping this unique facility operating is absolutely imperative. The Office of Nuclear Energy has been working with Naval Reactors to develop a plan to address those needs.

What is the status of the joint planning effort and why hasn't a plan been provided to the Committee on how much investment will be needed?

Secretary Moniz. The ATR is a vital asset that supports the Office of Nuclear Energy and Naval Reactors programs. There is a joint effort underway between the Office of Nuclear Energy and Naval Reactors to develop a long-range plan for ATR resources focused on investments to address aging equipment and systems.

Subcommittee. What is your timeline for completing the needed upgrades?

Secretary Moniz. The outcome of this effort is expected to be a multi-year plan, based on a prioritized list of maintenance, repairs and replacements that are directed at improving overall plant health and reactor plant performance, while ensuring continued safe and reliable operations. This plan will serve to develop more detailed and robust understanding of the requirements to support the critical work performed at the ATR. The plan is expected to be completed in the summer of 2015 and will include a prioritized schedule for the next 3-5 years detailing necessary investments and associated performance improvements.

NUCLEAR FUEL AND WASTE DISPOSITION

THE ADMINISTRATION'S STRATEGY FOR USED NUCLEAR FUEL DISPOSITION

Subcommittee. Mr. Secretary, this year's budget request, like last year's, includes a proposal to implement the Department's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste*, which would reform the nuclear waste management program and its current funding structure. The proposal, estimated at $5.7 billion over the first ten years, with $1.3 billion scored as mandatory, would support construction and operation of a pilot interim waste storage facility and full-scale, long-term geologic disposal without considering Yucca Mountain.

Can you discuss the highlights of the proposal, where things currently stand legislatively, and how you are pursuing its adoption?

Secretary Moniz. The proposal is to implement the Administration's Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste. Key components of the Strategy are to employ a consent-based process to site, license, construct and operate a pilot interim waste storage facility with an initial focus on accepting used nuclear fuel from shut-down reactor sites; a larger interim storage facility and a full-scale, long-term geologic disposal. The Department recognizes that legislation will be needed to support the legislative proposal in the FY 2016 President's Budget and to fully implement the Administration's Strategy. The Administration will continue to work with Congress on establishing a new, workable, long-term solution for nuclear waste management.

Subcommittee. This year's request includes $108 million for nuclear fuel disposition research and development, of which $24 million would be derived from the Nuclear Waste Fund (NWF). Can you describe, in general, what kind of research activities these funds support? Would this research be applicable to Yucca Mountain?

Secretary Moniz. In FY 2016, through NE's Used Nuclear Fuel Disposition (UNFD) subprogram, the Budget requests $30.0 million, including $24.0 million from the Nuclear Waste Fund, for generic process

development and other non-R&D activities related to storage, transportation, disposal, and consent-based siting.

Subcommittee. One of the large increases within the research activities funding is to initiate a field test to examine the viability of large diameter, deep borehole disposal of high-level waste. The request states that the field test will occur at a volunteer site sometime in the future. What's the plan for selecting the volunteer site and when do you expect this to occur?

Secretary Moniz. DOE plans to issue a request for proposals for a site for a deep borehole field test in FY 2015. This test is a research and development activity being conducted by NE's Office of Used Nuclear Fuel Disposition R&D to evaluate the feasibility of the deep borehole disposal concept emplacement of some DOE-owned wastes. In addition to serving NE's nuclear fuel disposition mission, the deep borehole field test could provide an opportunity to gain insights into the Department's crosscutting subsurface challenges (such as drilling techniques, wellbore stability, and sealing).

Subcommittee. The budget request proposes a new account line for activities associated with exploring potential alternative disposal options for high-level waste and spent nuclear fuel. However, the request is short on details and it's unclear what these alternative disposal options would be and how they fit into the overall waste management strategy. Can you outline for the Committee what alternative disposal options the Department wants to pursue and how these tie into our current plan?

Secretary Moniz. The Budget requests $3 million for activities associated with exploring potential alternative disposal options for some defense nuclear waste. These exploratory activities would provide information for evaluating nuclear waste disposal options.

WASTE CONTROL SPECIALISTS ANNOUNCEMENT

Subcommittee. Mr. Secretary, a few weeks ago Waste Control Specialists announced plans to build the nation's first private, interim storage site for spent nuclear fuel in west Texas. Waste Control Specialists has already announced plans to ask the NRC for a license and they predict they can start accepting waste in just five years.

Does this development change the Department's *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste?*

Secretary Moniz. No, this development does not change the Administration's commitment to the Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste (2013). The Department will move forward in a manner consistent with the Administration's Strategy. The Strategy has been based on the idea of a federal facility, but the idea of a privately-owned facility is an interesting dynamic. It is premature to speculate how a privately-owned facility might fit into this Strategy.

Subcommittee. Does a private company soliciting waste fit the definition of a consent-based siting process?

Secretary Moniz. The Department is committed to pursuing a consent-based siting process that will ensure public trust and confidence in decision-making throughout the process. The Administration's Strategy endorses the principle that prospective host jurisdictions must be recognized as partners, and that overall public trust and confidence is a prerequisite to success. Accordingly, the Department will seek to consult with affected parties and stakeholders at every step of the process. It would be premature, however, to speculate at this time on how a privately-owned facility might fit into that overall strategy.

Subcommittee. How will the Department strategically consider this plan as part of its overall waste strategy?

Secretary Moniz. It is premature to speculate how a privately-owned facility might fit into this Strategy.

FOSSIL ENERGY RESEARCH AND DEVELOPMENT

THE FUTURE OF COAL

Subcommittee. Mr. Secretary, the Environmental Protection Agency's final rules on carbon capture standards for existing and new power plants are expected to be issued this summer. Coal-fired plants would be required to install controls to capture, compress, and store underground about 40 percent of the carbon dioxide they produce. What do current CCS technologies look like and how much do you anticipate this will cost existing plants to implement?

Does the budget request take into account the proposed rules? How does it advance coal research to reduce the cost of implementing these regulations?

Mr. Secretary, coal accounts for 39 percent of our electricity, and it's as important as ever to make sure we use this resource well. The Fossil Energy Research and Development program has played a critical role to that end, both in improving existing technologies and inventing entirely new ones.

If you were provided an additional $50 million or $100 million to further advance second-generation CCS Technologies, how would you propose to spend it?

Secretary Moniz. The costs of carbon capture for units in the existing fleet will vary by unit but will be primarily driven by the size of the CO2 capture system utilized (and resulting economies of scale), which varies by plant size and net plant efficiency. Retrofitting the existing fossil fuel power plant fleet with CCS in today's policy environment provides the benefit of taking advantage of existing capital assets. Retrofit post-combustion capture technology options continue to improve in cost and performance, and are further strengthened by DOE's Fossil Energy program budget, which is helping to drive down the energy penalties and costs associated with both new and retrofit CCS technology. Notably, the first retrofit project at the Boundary Dam facility in Saskatchewan recently began operation, capturing over 1 million tonnes of CO2 per year. In addition, the New Source Performance Standard only requires a capture level of 30-40% of the produced CO2, further lowering costs for early systems. With the right incentives, retrofit projects will be deployed where market conditions are

favorable today, and further research, development, and demonstration will further reduce costs and may provide additional opportunities.

The Environmental Protection Agency's recently developed regulations for new and existing plants rely on cost information from a number of different sources, including studies conducted by the U.S. Department of Energy (DOE) regarding the cost of CCS systems, and cost information obtained from Southern Company's Kemper County IGCC-CCS project, which is supported by DOE. The CO2 emission rates required by the New Source Performance Standard are achievable with today's technologies, and the ongoing research conducted by DOE will further reduce both the energy penalty and cost associated with those technologies.

The FE R&D program, under the FY16 request, is supporting a robust and substantial CCS portfolio through the CCS technology program and through ongoing CCS demonstration projects supported by more than $6 billion in prior-year appropriations (including $3.2B from the American Recovery and Reinvestment Act of 2009 (ARRA) (Pub.L. 111–5)). These demonstration projects address current CCS technologies. The FY16 budget specifically requests funding for large-scale pilots to further test and develop the next generation (or second generation) technologies. These pilots are costly and unlikely to be undertaken independently by industry. This broad portfolio of second generation technologies is being funded to be ready for demonstration and deployment beginning in 2025. These large pilots focus on proving post-combustion capture technologies, including novel membrane techniques, but also aim to scale-up and test chemical looping and other advanced combustion systems.

Separately, the budget request also proposes two new refundable tax credits which may accelerate the commercial deployment of CCUS technologies. The proposed CCUS tax credit program offers two credits which apply to new and retrofitted electric generating units (EGUs) that deploy carbon capture technologies: Investment Tax Credits (ITCs) for eligible carbon capture property and Sequestration Tax Credits (STCs) for investments resulting in the permanent storage of carbon dioxide.

STEP INITIATIVE

Subcommittee. Mr. Secretary, the Supercritical Carbon Dioxide Technology crosscutting initiative is aimed at bringing together the Offices of Fossil Energy, Nuclear Energy, and EERE to work towards demonstrating how supercritical carbon dioxide can lower capital costs and improve thermal efficiencies at power plants. This year's budget request enables the Fossil Energy account to become the lead on this collaborative project.

In last year's request, more emphasis was placed on the role Nuclear Energy could play in the research and development of this technology. Can you explain the new leadership role of Fossil Energy within this crosscutting initiative?

Secretary Moniz. Supercritical CO2 (sCO2) power generation technology is relevant to the work of the Offices of Energy Efficiency and Renewable Energy (EERE), Fossil Energy (FE), and Nuclear Energy (NE), and all will benefit from this coordinated effort.

The Department has engaged in extensive stakeholder outreach to industry and academia and collected a wide array of input, for example through two Requests for Information issued in May 2014 and February 2015, as well as workshops, conferences and other stakeholder interactions. The Department has determined that the near-term deployment and greatest potential for market application (in terms of number of units and number of plants) for commercial sCO2 power cycles is primarily in the fossil energy space. This also aligns with House Appropriations Committee FY 2015 report language, which emphasized the importance of a strong fossil fuel focus and appropriate temperature range for this demonstration project. Given the state of the market and the resident expertise in the FE program, DOE has determined that FE is an appropriate funding organization and project manager for the supercritical transformational electric power (STEP) sCO2 pilot demonstration project.

The STEP project will be implemented in a way that maximizes our ability to deploy and test key system components capable of reaching temperatures above 700° Celsius, a range which has relevance and utility not just for fossil, but also nuclear and solar power. Through the coordinated, crosscutting approach to development of the STEP project established by the Department, we are confident that FE, NE, and EERE will all reap

substantial benefits from the STEP investment made through the FE and NE budget requests. It is also worth noting that FE, NE, and EERE will continue to pursue resource-specific research and development activities, the results of which will be shared to the benefit of all participating offices.

PETROLEUM PRODUCT RESERVES

SIZE OF THE STRATEGIC PETROLEUM RESERVE

Subcommittee. A September 2014 GAO report recommended reexamining the appropriate size of the Strategic Petroleum Reserve in light of current and expected future market conditions. In commenting on the draft report, the Department concurred with the recommendation, but said it should be part of a broader, long-range strategic review of the SPR and that a process to conduct this review had been initiated. To date, however, the Department has shared no details with the Committee.

Mr. Secretary, can you please describe the SPR review process? What is the current status of the review and the schedule for sharing its findings and analysis with the Committee?

Secretary Moniz. The Department is currently reviewing a draft scope of the proposed strategic review to determine future action.

NORTHEAST GASOLINE SUPPLY RESERVE

Subcommittee. The fiscal year 2015 Act requires the Department to submit a detailed plan for operation of the Northeast Regional Refined Petroleum Product Reserve. It is due within 180 days of enactment, which is roughly mid-June. What is the status of that plan? Are you on track for submitting it on time or possibly even early?

Secretary Moniz. The Office of Petroleum Reserves is on target to meet the requirement in the Consolidated and Further Continuing Appropriations Act of 2015 to submit a report on refined petroleum products that includes a detailed plan for operation of the Northeast Regional Refined Petroleum Product Reserve – recently renamed the Northeast Gasoline Supply Reserve – within 180 days of enactment of the Act.

LOAN GUARANTEE PROGRAMS

NEW NUCLEAR ENERGY PROJECTS SOLICITATION

Subcommittee. Mr. Secretary, I was pleased to see that the Department was making available the remainder of its loan guarantee authority for nuclear power projects. The last time the Department made a solicitation for nuclear power projects, the Vogtle plant in Georgia received $6.2 billion in loan guarantees to help construct two new reactors.

How is this solicitation different? What did you learn from the first solicitation and how did that change any of the criteria or focus of this solicitation?

Are any of the previous applications still active? Would they qualify for the new solicitation?

Secretary Moniz. In December 2014, the Department of Energy issued the Advanced Nuclear Energy Projects Solicitation, which makes $12.5 billion in loan guarantee authority available to support eligible innovative nuclear energy projects. The solicitation aims to accelerate the deployment of innovative nuclear energy projects that avoid, reduce, or sequester greenhouse gases in the U.S. as part of America's all-of-the-above energy strategy to address climate change.

While any project that meets the Title XVII eligibility requirements may apply, the Department has identified four key technology areas of interest under this solicitation: advanced nuclear reactors, small modular reactors, uprates and upgrades at existing facilities, and front-end nuclear projects. The first Part I application date was March 18, 2015, followed by rolling application deadlines approximately every six months through 2016.

Prior to this solicitation, the Department issued solicitations for nuclear power generation projects and front-end nuclear projects in 2008. Under these solicitations, the Department issued commitments and loan guarantees for $8.3 billion for nuclear power generation and a $2 billion conditional commitment for a front-end project.

Market conditions have changed since the original nuclear energy solicitations in 2008. There are still a number of innovative nuclear energy

technologies that are on the edge of commercial deployment that could benefit from loan guarantees issued under the Section 1703 program. The Vogtle project demonstrates that nuclear energy projects require long-lead times due to the complexity of the projects and the extensive permitting required. The current solicitation sends a signal to the market that financing may be available for future projects, which may give project developers the necessary certainty to proceed with the required certification and licensing.

Should any of the applicants from the 2008 solicitations signal their desire and ability to resume loan underwriting, LPO could restart due diligence on projects that remain eligible under the prior solicitation. If those applications proceed through due diligence to conditional commitment and a closed loan guarantee, funding would reduce the $12.5 billion in remaining authority available under the Advanced Nuclear Energy Projects solicitation.

CAPE WIND

Subcommittee. Last month a major setback was dealt to the Cape Wind offshore wind project when the two main companies that had agreed to buy energy from the project terminated their power purchase agreements. These two companies represented over 75 percent of the power purchase agreements for the project. With an ongoing, unresolved lawsuit and with only about half of their total funds raised, many considered this a death knell to the offshore wind project. The Department made a conditional commitment last July to provide $150 million in loan guarantees to the project.

Does this news change the Department's assessment of the viability of this project?

Will the Department continue to work on this application? If not, under what circumstances would you resume work on this project?

Does this change the outlook of offshore wind projects in this country?

Secretary Moniz. The Cape Wind project is a proposed offshore wind facility on Horseshoe Shoal in Nantucket Sound, MA being developed by Energy Management Inc. (EMI). The project will be powered by 101 wind turbines with a capacity of 363 megawatts (MW). If constructed, the project would be the first commercial-scale offshore wind facility in the U.S.

The total cost of the proposed Cape Wind project is approximately $2.5 billion. The proposed $150 million DOE-guaranteed loan would be a part of a $1.8 billion co-lending arrangement with commercial banks and a foreign export credit agency. Cape Wind had expected to begin construction of the project in January 2015; however, the project did not secure its financing by the end of 2014 as previously planned.

The proposed project would sell all of its output under two 15-year Power Purchase Agreements (PPAs). The Department notes that the off-takers have recently publicly reported that they were terminating their PPAs because Cape Wind had failed to complete financing and begin construction by the end of 2014 and did not to exercise their right to post financial security in order to extend the contract deadlines. However, as stated publicly, Cape Wind Associates, LLC disputes such termination.

On July 1, 2014, the Department issued a conditional commitment to Cape Wind Associates, LLC for a $150 million loan guarantee. Under the Title XVII program, the Department offers a conditional commitment prior to issuing a loan guarantee. The conditional commitment sets forth the principal terms and conditions of the Department's offer to provide a loan guarantee in support of the project. The conditional commitment and the negotiated loan guarantee documents specify the conditions precedent that must be met to the Department's satisfaction, which include fulfilling technical, legal, contractual, environmental and financial requirements, and securing the full project financing, before the Department will issue a loan guarantee.

To date, Cape Wind Associates, LLC has not met the conditions precedent necessary for the Department to issue the loan guarantee. The Department will continue to monitor its conditional commitment to Cape Wind Associates, LLC to determine whether the conditions precedent established in the conditional commitment and the loan guarantee documents have been met. Until those conditions are met the Department will not issue a loan guarantee.

First-of-their-kind projects in the U.S., like Cape Wind, often have difficulty accessing private capital. Likewise, necessary infrastructure, like ports and vessels, have not been established, which create additional challenges for first movers. As a result, it is not uncommon for innovative energy projects to take more time to develop than conventional projects.

The Department continues to support offshore wind energy in the United States as an important part of an all-of-the-above energy strategy to address climate change. Cape Wind is one of a number of offshore wind projects currently being developed in the United States, each with separate financing structures.

IVANPAH SOLAR ENERGY GENERATING SYSTEM

Subcommittee. Mr. Secretary, this month marks the one year anniversary of the opening of Ivanpah, the world's largest concentrating solar power plant. Ivanpah was the recipient of one of the largest loan guarantees the Loan Program Office has issued to date. Recent reports have shown that the project is not producing as much electricity as first thought. Could you update the Committee on the status of Ivanpah's production output and where problems exist?

If Ivanpah isn't able to satisfy its power purchase agreements, will it impact the repayment? If so, how? What alternatives would the Government have for collection?

Secretary Moniz. In April 2011, the Department of Energy issued a $1.6 billion loan guarantee to support construction of the Ivanpah Solar Energy Generating System—the world's largest concentrating solar power (CSP) plant and the first deployment of solar thermal tower technology in the United States. The project is owned by NRG, BrightSource Energy, and Google. Bechtel served as the engineering, procurement, and construction (EPC) contractor.

The Ivanpah facility is comprised of three separate concentrating solar towers, which generate electricity by concentrating sunlight using large mirrors (heliostats) at a solar receiver located at the top of the towers. These receivers generate the necessary heat to create high-temperature steam, which then drives a turbine that generates electricity. The facility has the capacity to generate 392 megawatts (MW) of clean electricity—enough to power more than 94,000 average American homes. Each individual tower sells it electricity under separate long-term power purchase agreements (PPAs) to Pacific Gas & Electric and Southern California Edison Company.

The Ivanpah project began construction in 2010 and achieved commercial operation in January of 2014. Since that time, the project has been selling power under its PPAs at the contracted price and servicing its debt payments to DOE.

However, the project's electricity generation has been below what was originally forecast for the period of operation following the commencement of commercial operations. The underproduction was due to a combination

of two factors: 1) technical start-up issues inherent with innovative technology deployments and 2) lower than forecasted solar irradiance.